**The Report Committee for Brittany Ann Horton**
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# An Analysis of the Impacts of China's Belt and Road Initiative on African Pangolin Conservation

**APPROVED BY**
**SUPERVISING COMMITTEE:**

Joshua W. Busby, Supervisor

William Inboden

# An Analysis of the Impacts of China's Belt and Road Initiative on African Pangolin Conservation

**by**

**Brittany Ann Horton**

**Report**

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# Dedication

This report is dedicated to all of the passionate wildlife conservation professionals who work every day to secure a future for wildlife all over the world and, of course, to the pangolins – hang in there. We're trying to figure this out.

# Acknowledgements

This project would not exist in its current form without the immense generosity, expertise, grace, and guidance of my readers at the LBJ School of Public Affairs: Dr. Joshua Busby and Dr. William Inboden. Their willingness to step out of their comfort zone to delve into the world of wildlife conservation, while sharing their own international relations subject matter knowledge, made this product better than I could have accomplished on my own and for that I am eternally grateful. I am also indebted to the work of TRAFFIC and the Wildlife Justice Commission whose data and comprehensive reports made my work possible. Lastly, thank you to my family, whose patience, understanding, and support helped me make it through my graduate education. I truly could not have accomplished any of this without them.

# Abstract


## An Analysis of the Impacts of China's Belt and Road Initiative on African Pangolin Conservation

Brittany Ann Horton, MGPS
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Supervisor: Joshua W. Busby

The purpose of this study is to assess the impact of China's Belt and Road Initiative on conservation of African pangolins, four species of scaly anteater endemic to Sub-Saharan Africa. This report is composed of four chapters: Chapter One introduces essential information about pangolin conservation and China's engagement with Africa through the Belt and Road Initiative. Chapters Two and Three review demand for pangolins and the pangolin trafficking supply chain. Chapter Four concludes the study, offers key takeaways from the study and policy recommendations for the United States Government and China to engage with pangolin conservation.

Pangolins are in demand for their scales, which are used in Traditional Chinese Medicine, and their meat, which is consumed in restaurants across China and Vietnam. The Belt and Road Initiative has served as a tool for China to promote the use of Traditional Chinese Medicine, through construction of TCM Centers and pharmaceutical exports. This is unlikely to slow down and as BRI grows, additional demand pressure will be placed on pangolins, which are sourced primarily from Africa. The pangolin trafficking supply chain shows Nigeria as the primary origin country, Singapore as the top transit country, and Vietnam as the main demand country (with China following) from 2016-2019. Analysis of Nigeria's role in international pangolin trafficking, as the top country between 2016-2019 suggests that BRI is a contributing factor to pangolin trafficking but cannot be separated out as its own driver of pangolin loss.

This study serves as an at-a-glance report on the nature of BRI and pangolin conservation. It was hindered by a range of data limitations, which plague the conservation

community as a whole. Although from a scientific perspective it would be pertinent to repeat this study in several years with better data once BRI has gained a stronger foothold, pangolins do not have the luxury of time.

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## Chapter One: Introduction to the Issue

Pangolins, the world's only truly scaly mammals,[1] are a family of eight species of scaly anteater endemic to Asia and Sub-Saharan Africa (Figure 1). Although pangolins have been utilized in traditional medicines across their range for centuries, in the last decade exploitation has skyrocketed to levels that are unsustainable both for pangolin populations and the humans utilizing pangolin products. An estimated one million pangolins were poached from 2000-2013,[2] trafficked along illicit trade routes, and sold as medicines and delicacies in East and Southeast Asia, most notably in China and Vietnam. The total number of pangolins remaining in the wild is uncertain, as population studies are inconclusive.[3] However, the substantial number of pangolins seized by law enforcement suggests high pressure on the planet's remaining wild pangolins.

**Figure 1. Scales comprise one-third of pangolins' body weight[4] and are the primary cause of global pangolin exploitation.[5]** Image courtesy of World Wildlife Fund.

[1] Challender, Daniel W. S., Carly Waterman, and Jonathan E. M. Baillie. "Scaling Up Pangolin Conservation: IUCN SSC Pangolin Specialist Group Conservation Action Plan." London, United Kingdom: Zoological Society of London, 2014. https://www.iucn.org/downloads/scaling_up_pangolin_conservation_280714_v4_1.pdf.

[2] Heinrich, Sarah, Talia Wittman, Joshua Ross, Chris Shepherd, Daniel Challender, and Phillip Cassey. "The Global Trafficking of Pangolins: A Comprehensive Summary of Seizures and Trafficking Routes from 2010 - 2015." Selangor, Malaysia: TRAFFIC, 2017. https://www.traffic.org/publications/reports/the-global-trafficking-of-pangolins/.

[3] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[4] MacDonald, James. "The Pangolin Extinction Vortex." *JSTOR Daily*, March 15, 2019. https://daily.jstor.org/the-pangolin-extinction-vortex/.

[5] World Wildlife Fund. "Species: Pangolin." World Wildlife Fund, n.d. https://www.worldwildlife.org/species/pangolin.

Pangolins have risen from relative obscurity to earn global attention with the moniker of "the world's most trafficked non-human mammal." The four Asian species were the initial target of traffickers' attention, but in recent years a shift occurred in pangolin trafficking. Asian species became progressively more difficult to find and traffickers set their sights on African species. Most recently, pangolins became part of the global public health conversation as they were identified as a possible intermediate host of SARS-CoV-2. This potential connection and its subsequent media attention have awareness of this animal for many around the world who were previously unfamiliar with the pangolin and its conservation.

While pangolin trafficking was on the rise, China was also shifting its attention to the African continent. On September 7, 2013, President Xi Jinping of China announced the creation of the Belt and Road Initiative (BRI) in his speech "Promote People-to-People Friendship and Create a Better Future." After initially focusing BRI's two main components – the Silk Road Economic Belt and the 21st Century Maritime Silk Road – on Asia, the ties between China and Africa have strengthened through Chinese financial investment and infrastructure across the African continent. One key component of China's extension of friendship to the world is through the promotion of Traditional Chinese Medicine (TCM), which uses pangolin scales in select remedies and is the most influential driver of pangolin trafficking.

Today, the most substantial pangolin trafficking occurs via transnational crime organizations along well-established routes from source countries in Sub-Saharan Africa (i.e. Nigeria, the Democratic Republic of Congo, and Cameroon) to destination countries (i.e. China and Vietnam). Pangolin trafficking on a small scale also occurs in Africa and Asia, however the immense shipment sizes trafficked by transnational crime organizations presents a more substantial threat to pangolin conservation and is the focus of conservationists' attention and intervention resources. Wildlife crime as a global illicit enterprise has security, public health, and governance implications for countries at every step of these trafficking routes, creating international consequences for the trafficking of this mammal and making pangolins the poster child for a multi-billion-dollar global wildlife crime industry.

The purpose of this study is to analyze the impact of China's Belt and Road Initiative on conservation of African pangolins. Within this report, there are four chapters. Chapter One is an introduction to the problem, with background on wildlife crime, pangolin trafficking, and China's relationship with Africa historically and in the context of BRI. Chapters Two and Three focus on

demand and supply, respectively. Both chapters begin with an introduction to this issue from existing literature, then an analysis of the role BRI has played on demand and supply of pangolins. Chapter Four highlights the sizeable need for additional research to fill key data gaps and provides policy recommendations for the United States and People's Republic of China based on each nation's vested interests in addressing pangolin conservation in light of their larger foreign policy aims.

## PART ONE: WILDLIFE CRIME AND PANGOLINS

The purpose of this section is to provide important context around the issue of pangolin trafficking as explored in this report. First, it begins with information on wildlife crime as a global illicit economy, with emphasis on attempts at global regulation and the scope of pangolin trafficking. Next, it introduces pangolins, explaining key aspects of their natural history, including the conservation community's limited knowledge about pangolin biology, population, and behavior. Each of the concepts introduced here are foundational to the subsequent chapters in this report.

### Wildlife Crime

#### *Scale and Consequences*

Wildlife crime, defined by INTERPOL as "criminal activity resulting in the illegal exploitation of wild flora and fauna"[6] is the largest component of environmental crime, which includes illicit activity in the wildlife, forestry, mineral resources, and fisheries sectors. Environmental crime is considered the fourth largest global illicit economy, behind narcotic, weapon, and human trafficking.[7] Attempts to estimate the total annual value of environmental and wildlife crime are varied due to difficulty in quantifying the full scale of the industry. However, in a joint report from the United Nations Environment Programme (UNEP) and INTERPOL, environmental crime has an estimated annual value of $91-258 billion annually, with wildlife

[6] INTERPOL. "Global Wildlife Enforcement: Strengthening Law Enforcement Cooperation Against Wildlife Crime." INTERPOL, March 2019.

[7] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

crime yielding an estimated $7-23 billion annually in revenue for transnational criminal organizations engaged in the industry.[8]

INTERPOL uses the term "wildlife crime" to describe not only wildlife poaching and trafficking, but its associated illicit activity. This includes document fraud, corruption, money laundering, and tax evasion.[9]

The most direct consequence of wildlife crime is the depletion of wildlife species and environmental destruction, either directly through deforestation and poaching action or indirectly through the removal of a species from their ecosystem. Wildlife crime as a practice has a highly adverse impact on biodiversity and ecosystem services provided by wildlife species. Exploitation of wildlife and close contact between wildlife and people can lead to risks for human security and global public health, evident of late in the zoonotic transmission of SARS-CoV-2, where pangolins were purported to be the intermediate carrier of the virus between bats and humans.[10] Wildlife crime also leads to social and governance challenges including increased corruption, trafficking of weapons and drugs, lost government income, declines in tourism, and reduced economic development. There is also a linkage between wildlife crime and international security, though the nexus between militant activity and wildlife trafficking is a small subset of the larger swath of maladies associated with wildlife crime activity.[11]

### *Key Actors and the Wildlife Trafficking Supply Chain*

Wildlife crime is not a uniform endeavor. Key actors involved in the trade encompass the full wildlife crime supply chain, but also range from opportunistic travelers to transnational criminal organizations. For the focus of this report, the emphasis is on industrial scale wildlife crime engaged in by transnational crime organizations. The United Nations Convention against Transnational Organized Crime defines organized criminal groups, such as those involved in

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[8] Nellemann, C., R Henricksen, A. Kreilhuber, D. Stewart, M. Kotsovou, P. Raxter, E. Mrema, and S. Barrat. "The Rise of Environmental Crime - A Growing Threat to Natural Resources, Peace, Development and Security." UNEP INTERPOL, 2016.

[9] INTERPOL. "Global Wildlife Enforcement: Strengthening Law Enforcement Cooperation Against Wildlife Crime." INTERPOL, March 2019.

[10] Lam, Tommy Tsan-Yuk, Na Jia, Ya-Wei Zhang, Marcus Ho-Hin Shum, Jia-Fu Jiang, Hua-Chen Zhu, Yi-Gang Tong, et al. "Identifying SARS-CoV-2-Related Coronaviruses in Malayan Pangolins." *Nature*, 2020. https://doi.org/10.1038/s41566-020-2169-0.

[11] Felbab-Brown, Vanda. "Wildlife and Drug Trafficking, Terrorism, and Human Security." The Brookings Institution, November 8, 2018. https://www.brookings.edu/articles/wildlife-and-drug-trafficking-terrorism-and-human-security/.

wildlife crime, as "a structured group of three or more persons, existing for a period of time and acting in concert with the aim of committing one or more serious crimes or offenses established in accordance with this Convention, in order to obtain, directly or indirectly, a financial or other material benefit."[12]

Although wildlife crime can be considered a low-risk, high-reward endeavor,[13] the complex supply chain requires a certain level of organizational structure which lends itself to the ability of an organization to harvest wildlife in biodiversity-rich regions, primarily Africa, Southeast Asia, and Latin America,[14] and smuggle product into destination countries with high demand for wildlife, typically Southeast and East Asia. Operating as complex transnational businesses, these networks are responsible for tasks including matching demand with supply, stockpiling goods, shipping product across regions and continents, transferring (and in many cases, laundering) money between countries, and maintaining control over actors at all levels of the supply chain.[15]

A sample wildlife trafficking supply chain is as follows: 1) Wildlife are harvested in range states; 2) Collected wildlife and their products are transported to a consolidation location where they are concealed with other commodities and prepared for shipment; 3) A shipment container, mixed with legal commodities and illegal wildlife products, is packed, the carrier issues a Bill of Lading, and the container is moved to port and loaded onto a ship for transcontinental transport; 4) In transit and at various ports, the Bill of Lading may be altered or the container may be moved onto a different ship; 5) When it reaches the arrival destination, the container is emptied and wildlife products are moved to a safe location; 6) Wildlife products are smuggled into destination countries, processed, and sold – legally or illegally – in domestic or international markets.[16]

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[12] United Nations Office on Drugs and Crime. "World Wildlife Crime Report: Trafficking in Protected Species." Vienna: United Nations Office on Drugs and Crime, 2016. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[13] TRAFFIC. "Combating Wildlife Crime Linked to the Internet." Cambridge, United Kingdom, 2019. https://www.traffic.org/publications/reports/combating-wildlife-crime-linked-to-the-internet/.

[14] Esmail, Nafeesa, Lauren Harrington, Jack Lam, Kelly Malsch, E.J. Milner-Gulland, Zara Bending, Michael t' Sas Rolfes, and Carole White. "Horizon Scanning for Illegal Wildlife Trade: A Strategic Approach to Inform Future CITES Policy Decisions." Policy Briefing. Oxford Martin Programme on the Illegal Wildlife Trade, August 16, 2019. https://www.oxfordmartin.ox.ac.uk/publications/cites-briefing-2019/.

[15] Costa, Jacopo. "Preliminary Report: Examining Wildlife Trafficking Networks in East Africa Through the Lens of Social Network Analysis." Basel Institute on Governance, December 2019. https://www.baselgovernance.org/publications/preliminary-report-examining-wildlife-trafficking-networks-east-africa-through-lens.

[16] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales.

In the early 2010s, terrorist organizations including Al-Shabaab, the Lord's Resistance Army, and the Janjaweed were commonly implicated in wildlife trafficking activity due to their nature as transnational crime groups, often with a defined organizational structure, access to weaponry, and capacity to engage in money laundering and other financial crimes. A 2013 ODNI report on wildlife poaching, specifically of rhinoceros and elephant, suggested that "criminal elements of all kinds, including some terrorist entities and rogue military officers, are becoming involved in countries across east, central, and southern Africa."[17] Contrary to this analysis, in 2014 Daniel Stiles determined that there is not a credible linkage between Al-Shabaab and ivory trafficking, but that the LRA and Janjaweed extensively poach and traffic ivory, but are not an immediate security threat to the United States.[18] This assertion is echoed by Vanda Felbab-Brown, who suggests that "analyses of the wildlife-trafficking-militancy-nexus are often shrouded in unproven assumptions and myths" that don't address underlying issues, such as the fact that militant groups play a limited role in the overall global wildlife trafficking picture.[19] Although the structure of militant groups is conducive to trafficking of illicit goods, wildlife trafficking and militancy are not strongly correlated.

***Regulation and Enforcement***

Large-scale wildlife crime in its current state is an international operation. However, enforcement of wildlife crime is hampered by the lack of any international convention defining wildlife crime.

The primary mechanism for international wildlife protection is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which has dictated the criteria for legal international trade in wildlife and plants since it came into force in 1975. As

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Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[17] Office of the Director of National Intelligence. "Wildlife Poaching Threatens Economic, Security Priorities in Africa." ODNI, September 6, 2013. https://www.dni.gov/files/documents/Wildlife_Poaching_White_Paper_2013.pdf.

[18] Stiles, Daniel. "Ivory Trade, Terrorism and U.S. National Security: How Connected Are They?," 2014. http://danstiles.org/publications/ivory/42.Ivory&National%20Security.pdf.

[19] Felbab-Brown, Vanda. "Wildlife and Drug Trafficking, Terrorism, and Human Security." The Brookings Institution, November 8, 2018. https://www.brookings.edu/articles/wildlife-and-drug-trafficking-terrorism-and-human-security/.

a result, CITES sets the rules around wildlife trade that transnational crime organizations subvert when engaging in trafficking activity.[20]

Today, 183 member states are Parties to the Convention, aiming to protect approximately 37,000 species or plants and animals.[21] CITES regulates wildlife trade through assessments of a species' risk of extinction from trade, listing species on one of three Appendices to reflect risk level. Appendix I is the most stringent level of monitoring. If a species is listed on Appendix I, legal international trade of that species is prohibited and "permitted only in exceptional circumstances," with import and export permits required in the event a specimen is traded.[22] Appendix II allows CITES to monitor species that are not currently threatened with extinction as a result of international trade, but may be in the future. For Appendix II species, export permits are required, while import permits are not required unless otherwise mandated by national law. Appendix III is the least stringent level of international regulation, where species are protected domestically by one or more Parties. In this case, CITES acts as a mechanism for Parties to collaborate multilaterally to regulate trade in listed species between themselves.

The United Nations Office on Drugs and Crime (UNODC) describes wildlife crime as "harvesting and trade contrary to national law,"[23] with the national laws in question being those which CITES Member Parties must enact domestically to provide the enforcement 'teeth' to CITES. In the United States, the Endangered Species Act of 1973 and its subsequent amendments provide this function. In China, the Law of the People's Republic of China on the Protection of Wildlife (1988) aims to protect threatened species.[24]

CITES is not without its limitations. Critics of CITES point to the rare "downlisting" of species, where conservation successes lead CITES Member Parties to move a species from Appendix I protections to the less stringent Appendix II. This is partly due to CITES role in regulating trade, rather than as a holistic international effort at wildlife protection. CITES protects

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[20] CITES. "Full text." CITES, n.d. https://cites.org/eng/disc/text.php.

[21] CITES. "What is CITES?" CITES, n.d. https://cites.org/eng/disc/what.php.

[22] CITES. "How CITES Works." CITES, n.d. https://cites.org/eng/disc/how.php.

[23] United Nations Office on Drugs and Crime. "World Wildlife Crime Report: Trafficking in Protected Species." Vienna: United Nations Office on Drugs and Crime, 2016. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[24] The People's Republic of China. "Law of the People's Republic of China on the Protection of Wildlife" [translated into English], 8 November 1988. http://www.china.org.cn/english/environment/34349.htm#:~:text=Law%20of%20the%20People's%20Republic,Wildlife%20%2D%2D%20china.org.cn&text=Article%201%20This%20Law%20is,resources%20and%20maintaining%20ecological%20balances.

species in terms of trade risk only, which is just one driver of global biodiversity loss. Climate change, disease, habitat loss and degradation, invasive alien species, and many other drivers are placing pressure on wildlife species, and CITES is unable to answer this challenge through addressing international trade. Also, as a body comprising nation states with voting power and conservation NGOs with observer status, CITES is not exempt from political motivations in listing decisions. On occasion, conservation is limited by politics as the CITES Secretariat has limited power to keep Parties in alignment with the larger conservation goals and mechanisms of the Convention. Most importantly, Parties are required to implement domestic legislation in compliance with CITES, but there is little recourse for the Secretariat to act if countries do not pass conservation regulations at home or if enforcement capacity renders CITES ineffective on their borders. An additional enforcement challenge arises when different nations have disparate wildlife regulations, as is the case with pangolins, where what is legal domestically in one country may not be legal in another.[25] Lastly, sometimes listing can simply come too late, either due to the political nature of the discourse or large number of drivers impacting its conservation. CITES is not perfect, but it's the most influential framework on the table today.

### *Species Caught in the Trade*

Wildlife crime impacts species of every taxa, from mammals to birds to reptiles to fish to insects.[26] Whether for TCM, tourist trinkets, or the global pet trade, wildlife crime has significant impacts on the conservation of species on every continent, except Antarctica. The more charismatic megafauna – rhinoceros, elephant, tiger, and pangolin – comprise the majority of illegal wildlife trade and take up most of the oxygen in terms of global advocacy and enforcement attention.

When analyzing wildlife crime as a global phenomenon, it is important to not make generalizations when interpreting drivers of species loss across multiple species. While the rate of

[25] The People's Republic of China. "Law of the People's Republic of China on the Protection of Wildlife" [translated into English], 8 November 1988. http://www.china.org.cn/english/environment/34349.htm#:~:text=Law%20of%20the%20People's%20Republic,Wildlife%20%2D%2D%20china.org.cn&text=Article%201%20This%20Law%20is,resources%20and%20maintaining%20ecological%20balances

[26] Actman, Jani. "Bug Smuggling Is Big Business." *National Geographic*, September 5, 2019. https://www.nationalgeographic.com/animals/2019/09/bug-smuggling-big-business/.

species extinction is nearly 1,000 times the historical average,[27] the mechanisms of wildlife crime and exploitation are not uniform. Rather, each species of wildlife engulfed in wildlife crime has unique drivers of loss and when combined with other species, can be thought of as a group of distinct but related illicit markets.[28] Although pangolin trafficking shares similar characteristics to the markets for elephant or rhinoceros, pangolins have their own unique natural history, ranges, and place within the wildlife crime picture.

## The Pangolin Conservation Picture

### *Natural History*

Despite their prominent role in the conversation on wildlife crime, the global conservation community knows relatively little about pangolins. Pangolins are at risk of disappearing before many in the West learn of their existence and before the scientific community is able to unravel some of the mysteries about their natural history.

Pangolins serve an integral role in their ecosystem and are referred to as "ecosystem engineers."[29] As insectivores, an adult pangolin can consume a diet of approximately 70 million ants and termites every year,[30] providing a regulatory function for insect populations and maintaining the health of forest ecosystems. They utilize their long claws on their forelimbs to dig burrows to nest and sleep, which also provide essential habitat for other species of wildlife after pangolins have departed the area.

Pangolins are best known for their scales, made of compressed hair and primarily composed of keratin. A single animal can have over 1,000 continually growing scales on its body.[31] Scales are invaluable to pangolins when faced with a predator, as they roll into a tight ball in order

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[27] Felbab-Brown, Vanda, and Bradley S. Porter. "The Global Poaching Vortex." The Brookings Institution, March 2, 2016. https://www.brookings.edu/blog/order-from-chaos/2016/03/02/the-global-poaching-vortex/.

[28] United Nations Office on Drugs and Crime. "World Wildlife Crime Report: Trafficking in Protected Species." Vienna: United Nations Office on Drugs and Crime, 2016. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[29] United States Fish and Wildlife Service International Affairs. "Pangolins." United States Fish and Wildlife Service, International Affairs, n.d. https://www.fws.gov/international/animals/pangolins.html.

[30] Ibid.

[31] MacDonald, James. "The Pangolin Extinction Vortex." *JSTOR Daily*, March 15, 2019. https://daily.jstor.org/the-pangolin-extinction-vortex/.

to protect themselves against a lion or leopard (Figure 2). However, this instinctive protection mechanism makes them easy targets for poachers, who can simply reach down and pick them up.

**Figure 2. Pangolins' natural defense works against them when confronted by poachers**. Image courtesy of Save Pangolins.[32]

Unfortunately for conservationists, poachers, and pangolins alike, pangolins are becoming more difficult to find.[33] Our knowledge of pangolin exploitation comes primarily from anecdotal information and trafficking analyses rather than population studies, with population measurements being the conservation community's preferred method of determining the species health. Pangolins' nocturnal and solitary behavior, and lack of any unique physical markings,[34] presents a challenge for monitoring and population surveys. To date, no comprehensive pangolin population estimates exist.[35] However, in 2014, all eight pangolin species were listed on the IUCN Red List of Threatened Species as threatened with extinction.[36] Listing is typically based on

[32] Save Pangolins. "What is a pangolin?" Save Pangolins, n.d. https://www.savepangolins.org/what-is-a-pangolin.

[33] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[34] Willcox, Daniel, Helen Nash, Scott Trageser, Hyeon Jeong Kim, Lisa Hywood, Ellen Connelly, Godwill Ichu Ichu, et al. "Evaluating Methods for Detecting and Monitoring Pangolin (Pholidota: Manidae) Populations." *Global Ecology and Conservation* 17 (January 20, 2019): 1–25. https://doi.org/10.1016/j.gecco.2019.e00539.

[35] United Nations Office on Drugs and Crime. "World Wildlife Crime Report: Trafficking in Protected Species." Vienna: United Nations Office on Drugs and Crime, 2016. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[36] International Union for the Conservation of Nature SSC Pangolin Specialist Group. "The Status, Trade and Conservation of Pangolins (Manis Spp.)." Information Document for the 17th Meeting of the Conference of Parties to CITES. Johannesburg, South Africa, 2016.

population assessment, but in the case of highly trafficked species like pangolins, an estimation of high exploitation can lead to a listing change and bring increased awareness associated with listing action. Conservationists believe that due to high levels of pangolin trafficking, coupled with slow pangolin reproductive rates,[37] that all eight species are in decline. Without population data, however, the exact numerical impact of these factors on pangolin conservation is unknown.[38]

Outside of trafficking pressure, pangolins are also facing challenges of habitat loss. Deforestation in Central Africa is directly impacting three species of pangolin, resulting in habitat degradation, increased difficulty to find food, and higher poaching pressure as humans are brought into closer contact with pangolins.[39] In Southern Africa, land management practices, specifically installation of electric fences, lead to pangolin fatalities.[40]

### *Asian Pangolins*

Four pangolin species are endemic to Asia (Figure 3): the Chinese pangolin (*Manis pentadactyla*), Philippine pangolin (*M. culionensis*), Sunda pangolin (*M. javanica*), and Indian pangolin (*M. crassicaudata*). As of the most recent assessments in 2018-2019, the Chinese pangolin, Philippine pangolin, and Sunda pangolin are all listed as Critically Endangered on the IUCN Red List, while the Indian pangolin is listed as Endangered.

[37] United Nations Office on Drugs and Crime. "World Wildlife Crime Report: Trafficking in Protected Species." Vienna: United Nations Office on Drugs and Crime, 2016. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[38] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[39] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[40] Challender, Daniel W. S., Carly Waterman, and Jonathan E. M. Baillie. "Scaling Up Pangolin Conservation: IUCN SSC Pangolin Specialist Group Conservation Action Plan." London, United Kingdom: Zoological Society of London, 2014. https://www.iucn.org/downloads/scaling_up_pangolin_conservation_280714_v4_1.pdf.

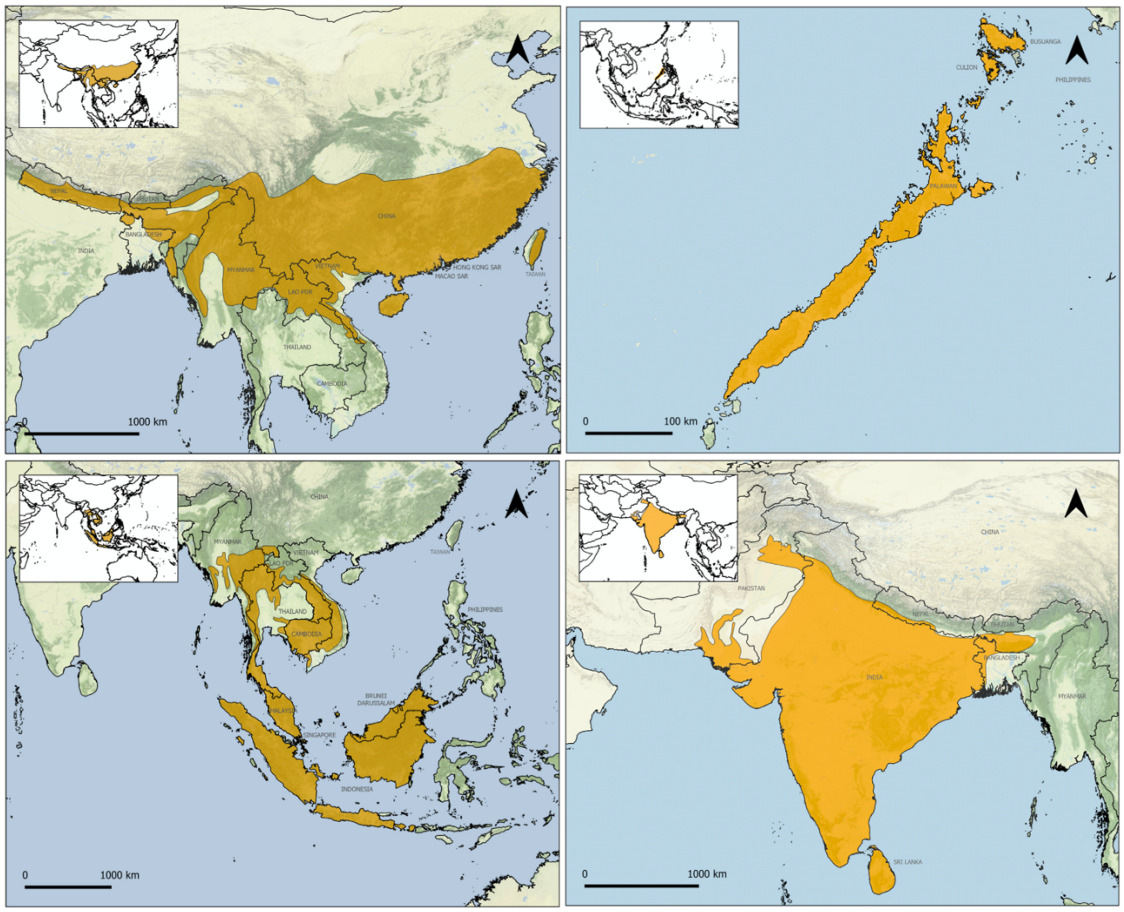


**Figure 3. Ranges of Asian pangolin species.** (Top Left) Chinese pangolin are extant in Bangladesh, Bhutan, China, Hong Kong, India, Lao PDR, Myanmar, Nepal, Taiwan, Thailand, and Vietnam, and are found in forest, shrubland, and grassland habitats.[41] (Top Right) Philippine pangolin are extant in the Philippines and are found in forest and shrubland habitats.[42] (Bottom Left) Sunda pangolin are extant in Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand, and Vietnam and possibly in China, and are found in forest and shrubland habitats.[43] (Bottom Right) Indian pangolin are extant to Bangladesh, India, Nepal, Pakistan, and Sri Lanka and found in forest, savanna, shrubland, and grassland habitats.[44]

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[41] Challender, D., Wu, S., Kaspal, P., Khatiwada, A., Ghose, A., Ching-Min Sun, N., Mohapatra, R.K. & Laxmi Suwal, T. 2019. *Manis pentadactyla* (errata version published in 2020). *The IUCN Red List of Threatened Species* 2019:e.T12764A168392151. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12764A168392151.en. Downloaded on 13 May 2020.; Image from *Pangolins* text page 54.

[42] Schoppe, S., Katsis, L. & Lagrada, L. 2019. *Manis culionensis*. *The IUCN Red List of Threatened Species* 2019: e.T136497A123586862. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T136497A123586862.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 114.

[43] Challender, D., Willcox, D.H.A., Panjang, E., Lim, N., Nash, H., Heinrich, S. & Chong, J. 2019. *Manis javanica*. *The IUCN Red List of Threatened Species* 2019: e.T12763A123584856. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12763A123584856.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 94.

[44] Mahmood, T., Challender, D., Khatiwada, A., Andleeb, S., Perera, P., Trageser, S., Ghose, A. & Mohapatra,

### *African Pangolins*

The other four pangolin species are endemic to Sub-Saharan Africa (Figure 4): the white-bellied pangolin (*Phataginus tricuspis*), black-bellied pangolin (*P. tetradactyla*), giant ground pangolin (*Smutsia gigantea*), and Temminck's pangolin/ground pangolin (*S. temminckii*). Similar to the Asian pangolin species, all four species' populations are considered to be in decline, although fewer population data are available for African pangolins than their Asian counterparts.[45] As of the most recent assessments in May 2019, the white-bellied pangolin and giant ground pangolin are listed as Endangered and the black-bellied pangolin and Temminck's pangolin are listed as Vulnerable on the IUCN Red List of Threatened Species.

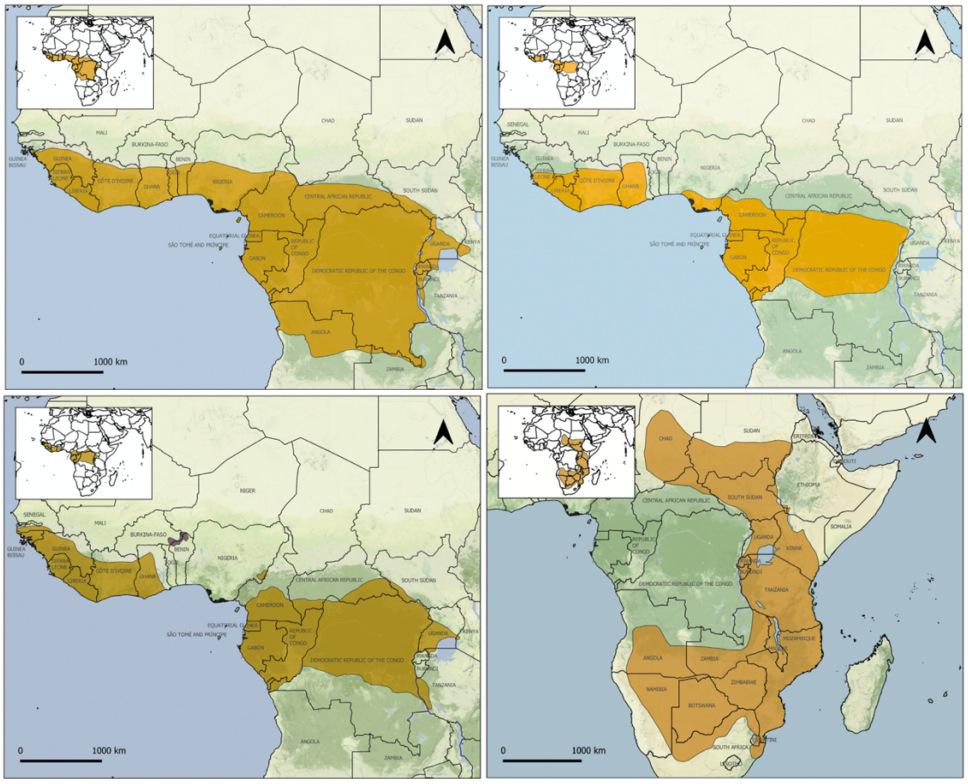


**Figure 4. Ranges of African pangolin species.**

R. 2019. *Manis crassicaudata*. *The IUCN Red List of Threatened Species* 2019: e.T12761A123583998. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12761A123583998.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 76.

[45] International Union for the Conservation of Nature SSC Pangolin Specialist Group. "The Status, Trade and Conservation of Pangolins (Manis Spp.)." Information Document for the 17th Meeting of the Conference of Parties to CITES. Johannesburg, South Africa, 2016.

**Figure 4. Ranges of African Pangolin Species.** (Top Left) White-bellied pangolin are extant in Angola, Benin, Burundi, Cameroon, Central African Republic, Republic of Congo, Democratic Republic of the Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Nigeria, Rwanda, Sierra Leone, South Sudan, Tanzania, Togo, Uganda, and Zambia, and are found in forest and savanna habitats.[46] (Top Right) Black-bellied pangolin are extant in Cameroon, Central African Republic, Congo, Democratic Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone, and are possibly extant in Angola and Uganda. This species is found in forest and savanna habitats.[47] (Bottom Left) Giant ground pangolin are extant in Cameroon, Central African Republic, Congo, Democratic Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Rwanda, Senegal, Sierra Leone, South Sudan, Tanzania, Uganda and are possibly extant in Benin, Burkina Faso, Kenya, and Niger. They are found in forest and savanna habitats.[48] (Bottom Right) Temminck's pangolin are extant in Angola, Botswana, Burundi, Central African Republic, Chad, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe, possibly extant in Democratic Republic of Congo, and possibly extinct in Eswatini. They are found in forest, savanna, and grassland habitats.[49]

### *Attempts to Protect Pangolins*

With pangolins ranging across Asia and Africa, conservation of the eight pangolin species is an inherently international undertaking. In 2000 CITES Parties adopted a zero-export quota for wild-caught Asian pangolins, as Asian species were the primary product of commercial pangolin trade at the time. Asian pangolins dominated the legal market until around 2014, when trade of African species increased sharply. From 2013 to 2017, legal imports of African pangolins went from almost zero to approximately 13 tons.[50] These shipments originated in Burundi, Democratic

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[46] Pietersen, D., Moumbolou, C., Ingram, D.J., Soewu, D., Jansen, R., Sodeinde, O., Keboy Mov Linkey Iflankoy, C., Challender, D. & Shirley, M.H. 2019. *Phataginus tricuspis*. *The IUCN Red List of Threatened Species* 2019: e.T12767A123586469. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12767A123586469.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 146.

[47] Ingram, D.J., Shirley, M.H., Pietersen, D., Godwill Ichu, I., Sodeinde, O., Moumbolou, C., Hoffmann, M., Gudehus, M. & Challender, D. 2019. *Phataginus tetradactyla*. *The IUCN Red List of Threatened Species* 2019: e.T12766A123586126. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12766A123586126.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 129.

[48] Nixon, S., Pietersen, D., Challender, D., Hoffmann, M., Godwill Ichu, I., Bruce, T., Ingram, D.J., Matthews, N. & Shirley, M.H. 2019. *Smutsia gigantea*. *The IUCN Red List of Threatened Species* 2019: e.T12762A123584478. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12762A123584478.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 162.

[49] Pietersen, D., Jansen, R. & Connelly, E. 2019. *Smutsia temminckii*. *The IUCN Red List of Threatened Species* 2019: e.T12765A123585768. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12765A123585768.en. Downloaded on 13 May 2020. Image from *Pangolins* text page 181.

[50] UNODC, 2020 – Wildlife crime, pangolin scales report United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

Republic of the Congo, Republic of Congo, and Uganda, and 99% of these shipments were imported into China.[51] CITES Member Parties responded to this shift by listing all eight species of pangolins on Appendix I, which went into effect in January 2017.

As for pangolin range states, by May 2020 only 17 countries had legislation to protect pangolins that meets CITES requirements and the other 31 countries had not.[52] According to the IUCN SSC Pangolin Specialist Group, pangolin trade is a conservation concern in Angola, Benin, Cameroon, Central African Republic, Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea, Kenya, Liberia, Nigeria, Sierra Leone, South Africa, Togo, and Uganda.[53] For each African species, protection across their range is variable, with some countries offering full protection, others only partial, and several – including the Central African Republic, Congo, Gabon, Kenya, and Liberia not offering any protection for their endemic pangolins.[54]

In China, pangolins are partially protected under the Law of the People's Republic of China on the Protection of Wildlife, also referred to as China's Wildlife Protection Law. The law was adopted on 8 November 1988, and was "formulated for the purpose of protecting and saving the species of wildlife which are rare or near extinction, protecting, developing and rationally utilizing wildlife resources and maintaining ecological balances."[55] Under the Wildlife Protection Law, "wildlife resources shall be owned by the state" which requires "citizens of the People's Republic of China [to] have the duty to protect wildlife resources and the right to inform the authorities of or file charges against … destruction of wildlife resources."[56] Wildlife are listed as Class I or Class II species under the law, which similar to CITES Appendices provides differing levels of protection. The Chinese pangolin (*M. pentadactyla*) was listed as a Class II species and was the

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[51] UNODC, 2020 – Wildlife crime, pangolin scales report United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[52] Guynup, Sharon. "Pangolins On the Brink as Africa-China Trafficking Persists Unabated." *Mongabay*, May 8, 2018. https://news.mongabay.com/2018/05/pangolins-on-the-brink-as-africa-china-trafficking-persists-unabated/.

[53] International Union for the Conservation of Nature SSC Pangolin Specialist Group. "The Status, Trade and Conservation of Pangolins (Manis Spp.)." Information Document for the 17th Meeting of the Conference of Parties to CITES. Johannesburg, South Africa, 2016.

[54] Ibid.

[55] The People's Republic of China. "Law of the People's Republic of China on the Protection of Wildlife" [translated into English], 8 November 1988. http://www.china.org.cn/english/environment/34349.htm#:~:text=Law%20of%20the%20People's%20Republic,Wildlife%20%2D%2D%20china.org.cn&text=Article%201%20This%20Law%20is,resources%20and%20maintaining%20ecological%20balances.

[56] Ibid.

only pangolin species protected domestically in China, as it is the only pangolin species endemic to China.[57] This listing provided incomplete protection for pangolins in two key ways: 1) It relegated protection to the provincial, rather than national, level,[58] and 2) Exemptions for TCM use allowed for legal trade in pharmaceuticals containing pangolin products.[59] On 5 June 2020, the Chinese State Forestry and Grassland Administration announced that pangolin protection would be strengthened as all eight pangolin species will now be considered Class I species, joining other charismatic protected species like the giant panda.[60] As part of Class I protection, pangolin trafficking penalties should increase in severity and pangolin habitat should be protected. Enforcement is a key issue, which will reflect how serious China is about protecting pangolins. The primary loophole in this listing is that pangolin-based TCM products sourced from "officially approved government stockpiles" remain legal.[61] This facilitates laundering of illegally-sourced pangolins, described in more detail in chapter 2. There is potential room for optimism, however. Quickly after the listing changed, the newly published 2020 edition of the *Chinese Pharmacopoeia*, which contains TCM remedies that rely on wildlife, partially omitted pangolins by removing pangolin scales as a raw material but keeping eight patented medicines which utilize pangolin as a key ingredient.[62] Since TCM is a major driver of pangolin demand, and the resulting poaching and trafficking, removal of pangolins as a raw material in the pharmacopoeia is a positive first step for pangolins under domestic law in China – but it remains incomplete. According to Paul Thomson, Executive Director of the Save Pangolins NGO, "China's move to phase out pangolin scales from traditional medicines could be the game changer we have been waiting for."[63]

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[57] State Forestry and Grassland Bureau Government Network. "List of National Key Protected Wild Animals" (translated to English). Ministry of Forestry and Agriculture of the People's Republic of China, 14 January 1989. http://www.forestry.gov.cn/main/3954/20180104/1063883.html.

[58] MacDonald, James. "The Pangolin Extinction Vortex." *JSTOR Daily*, March 15, 2019. https://daily.jstor.org/the-pangolin-extinction-vortex/.

[59] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[60] No Author. "No More Medicine! Pangolin "Delisted" From Pharmacopoeia (translated to English). *Health Times*, 9 June 2020. http://www.jksb.com.cn/html/xinwen/2020/0609/163148.html

[61] TRAFFIC. "China Moves to Give Full Protection to Native Pangolins." Press Release. Wildlife Trade News from TRAFFIC, June 5, 2020. https://www.traffic.org/news/china-moves-to-give-full-protection-to-native-pangolins/.

[62] Alberts, Elizabeth Claire. "Did China Really Ban the Pangolin Trade? Not Quite, Investors Say." *Mongabay*. June 24, 2020. https://news.mongabay.com/2020/06/did-china-really-ban-the-pangolin-trade-not-quite-investigators-say/.

[63] Briggs, Helen. "Hope for Pangolins as Protection Boosted in China." *BBC News*, June 10, 2020. https://www.bbc.com/news/science-environment-52981804.

True protection for pangolins in China will ultimately require complete removal of pangolins from TCM remedies listed within the pharmacopoeia, closing the domestic TCM stockpile loophole, enforcing the Class I listing, and promoting demand reduction and public education strategies to discourage consumption of pangolin products.

Second to China in terms of the scale of pangolin demand, Vietnam also provides protections for pangolins and other trafficked wildlife. In January 2018, Vietnam's penal code was amended to permit up to 15 years in prison and fines of up to USD$660,000 for individuals and organizations involved in trafficking wildlife such as pangolins.[64] Despite these consequences for trafficking, pangolin trafficking into Vietnam remains persistent.[65]

Although the United States acknowledges that all eight pangolin species are experiencing population decline, only the Temminck's pangolin (*S. temminckii*) is protected under the Endangered Species Act (ESA).[66] The ESA prohibits the "take" of endangered species, prohibiting the killing of these species and destruction of their habitat. The ESA often limits export and import of listed species internationally, bringing the United States into alignment with CITES. In January 2020, the Center for Biological Diversity, Humane Society International, Humane Society of the United States, Born Free USA, and the Natural Resources Defense Council joined together to sue the Trump Administration to list the other seven pangolin species under the ESA, but today the Temminck's remains the only pangolin covered by the law in the United States.[67]

Legal protections are only a portion of the conservation effort. Legislation is often hampered by ineffective enforcement, corruption, and limited meaningful international cooperation which allow pangolin poaching and trafficking to continue.[68]

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[64] No Author. "Vietnam Strengthens Law Enforcement Efforts to Protect Wildlife. WildAid. https://wildaid.org/vietnampenalcode/.

[65] Southerland, Dan. "Record Pangolin Seizures in Asia Highlight Risk to Obscure Creature." *Radio Free Asia*, April 19, 2019. https://www.rfa.org/english/commentaries/pangolin-trafficking-04192019151944.html.

[66] United States Fish and Wildlife Service International Affairs. "Pangolins." United States Fish and Wildlife Service, International Affairs, n.d. https://www.fws.gov/international/animals/pangolins.html.

[67] Center for Biological Diversity, Humane Society International, The Humane Society of the United States, Born Free USA, and Natural Resources Defense Council (Plaintiffs). Complaint for Declaratory Injunctive Relief. https://s3-us-west-2.amazonaws.com/s3-wagtail.biolgicaldiversity.org/documents/Pangolin_12_Mo_Complaint_FINAL_1_22_20_Ver_4.pdf.

[68] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

***COVID-19 and Pangolin Conservation***

Conservation efforts for pangolins have achieved minimal results thus far and have been complicated by the spread of the SARS-CoV-2 virus. The COVID-19 pandemic caused by the SARS-CoV-2 virus uprooted the entire planet and impacted nearly every facet of life, while bringing a new level of notoriety to the previously little-known pangolin. On 30 January 2020, the WHO declared COVID-19 a Public Health Emergency of International Concern.

As a coronavirus, SARS-CoV-2 is a zoonotic disease that originates in wildlife, often bats, and requires an intermediate host to transfer to humans. Shortly after the WHO declaration, scientists from South China Agricultural University announced on February 7 that they had identified a 99% likelihood that pangolins acted as the intermediate host for SARS-CoV-2.[69] Independent analysis in subsequent months has shown an 85-92% similarity between the SARS-CoV-2 viral genome and pangolin coronaviruses.[70] As of July 2020, the main hypothesis of transmission is that the virus moved from horseshoe bats to pangolins, although this finding is continually being studied.[71]

Early in the pandemic, authorities in China identified a wet market in Wuhan, China as the epicenter of the COVID-19 pandemic and deemed pangolins to be the most likely intermediate host for SARS-CoV-2. Pangolins are known carriers of coronaviruses, similar to SARS-CoV-2, and as the world's most trafficked mammal are often illegally sold in markets like the one in Wuhan along with other trafficked wildlife. As of June 2020, no other potential intermediate host, such as snakes or pigs, has been identified as a more likely carrier of SARS-CoV-2 than pangolins, and the general scientific consensus at that time was a transmission chain from bats to pangolins to humans. In the following chapters, I will address the impact of COVID-19 on demand for pangolins and wildlife products and on the pangolin trafficking supply chain.

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[69] Cyranoski, David. 7 Feburary 2020. Did pangolins spread the China coronavirus to people? *Nature*.

[70] Lam, Tommy Tsan-Yuk, Na Jia, Ya-Wei Zhang, Marcus Ho-Hin Shum, Jia-Fu Jiang, Hua-Chen Zhu, Yi-Gang Tong, et al. "Identifying SARS-CoV-2-Related Coronaviruses in Malayan Pangolins." *Nature*, 2020. https://doi.org/10.1038/s41566-020-2169-0.; Zhang, Tao, Qunfu Wu, and Zhigang Zhang. "Probable Pangolin Origin of SARS-CoV-2 Associated with the COVID-19 Outbreak." *Current Biology* 30, no. 8 (April 20, 2020). https://doi.org/10.1016.j.cub.2020.03.022.

[71] Lau, Susanna, Hayes Luk, Antonio Wang, Kenneth Li, Longchao Zhu, Zirong He, Joshua Fung, Tony Chan, Kitty Fung, and Patrick Woo. *Emerging Infectious Diseases* 26, no. 7 (July 2020). https://wwwnc.cdc.gov/eid/article/26/7/20-0092_article.

In conclusion, demand for pangolin scales and meat is driving them toward extinction as pangolins are trafficked from African range states into Asia. Despite both international and domestic protections for these species, and the onset of the COVID-19 global pandemic with its linkages to pangolins and wildlife consumption, the state of pangolin conservation is dire. At the same time as pangolin exploitation was increasing, China's Belt and Road Initiative began. In Part Two, I introduce key aspects of this initiative and the role of BRI on the African continent.

## PART TWO: THE BELT AND ROAD INITIATIVE IN AFRICA

The purpose of this study is to assess the level of impact the People's Republic of China's Belt and Road Initiative (BRI) – also known as the New Silk Road and One Belt One Road (OBOR) – has placed on African pangolin species through demand and supply pressures. In order to understand BRI and its global reach, this section provides an introduction to BRI which subsequent chapters will build upon.

The Belt and Road Initiative is the sweeping plan by President Xi Jinping and the Communist Party of China (CPC) to engage with the rest of the world. "BRI" itself is an umbrella term encompassing the project's two main components and its network of financial and infrastructure branches: The Silk Road Economic Belt and the 21st Century Maritime Silk Road (Figure 5).


**Figure 5. Planned BRI corridors.** Image courtesy of Top China Travel.[72]

[72] Top China Travel – What is OBOR page. "One Belt One Road Initiative." *Top China Travel*, n.d. https://www.topchinatravel.com/silk-road/one-belt-one-road.htm.

## Core Principles

In his 2013 introduction speech, President Xi described BRI as a 21st-century continuation of the Silk Roads from over 2,000 years ago, stating that "these ancient silk routes opened windows of friendly engagement among nations, adding a splendid chapter to the history of human progress…Spanning thousands of miles and years, the ancient silk routes embody the spirit of peace and cooperation, openness and inclusiveness, mutual learning, and mutual benefit."[73]

Through the act of making agreements with BRI partner states, President Xi and the CPC have stated that these partnerships will have four key characteristics: 1) Green, with deepened cooperation in environmental protection and biodiversity conservation, 2) Healthy, through increased exporting of Chinese medicine and cooperation on global diseases, 3) Intelligent, by utilizing vocational training and skills programs, and 4) Peaceful, by encouraging cooperation on issues of international security.[74] These tenets are the basis of how President Xi and the CPC are presenting BRI to the world.

## Current Scope

BRI is truly global in its reach. According to the Chinese government, by April 2019 the PRC had conducted outreach with over 125 countries across Asia, Africa, and Europe.[75] The PRC also reported that by March 2020, 138 countries were considered "part of the BRI" through becoming signatories on memoranda of understanding with China (Figure 6).[76] There is inherent difficulty in independently verifying which nations have signed MOUs with China to initiate an official BRI membership. While the Chinese government has reported over 100 nations as

[73] Xi, Jinping. "Work Together to Build the Silk Road Economic Belt and the 21st Century Maritime Silk Road." Speech presented at the The Belt and Road Forum for International Cooperation, Beijing, China, May 14, 2017. https://eng.yidaiyilu.gov.cn/qwyw/rdxw/13297.htm.

[74] No Author. "The Belt and Road." Belt and Road Portal, n.d. https://eng.yidaiyilu.gov.cn/ztindex.htm.

[75] Dollar, David. "Understanding China's Belt and Road Infrastructure Projects in Africa." The Brookings Institution, September 2019. https://www.brookings.edu/wp-content/uploads/2019/09/FP_20190930_china_bri_dollar.pdf.

[76] The Green Belt and Road Initiative Center. "Countries of the Belt and Road Initiative (BRI)." n.d. https://green-bri.org/countries-of-the-belt-and-road-initiative-bri.

participants in BRI, reflected in Figure 6, independent analyses place the number closer to 60 countries,[77] representing over 2/3 of the world's population.[78]

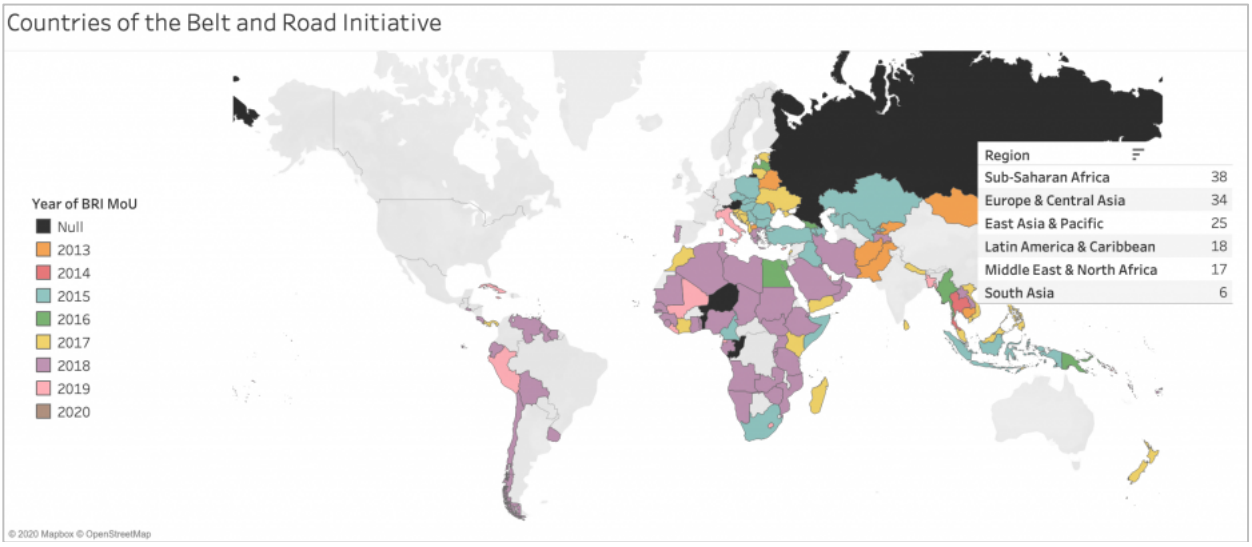


**Figure 6. Countries with Signed BRI MOUs as of March 2020.**
Image courtesy of the Green Belt and Road Initiative Center.[79]

The primary interaction between China and BRI partner countries is through lending to developing nations, to fund infrastructure projects including railways, ports, and water and energy projects.[80] Within BRI participating countries, China has spent billions of dollars in supporting the construction of these projects while engaging in economic initiatives there.[81] As of January 2020, according to the Council on Foreign Relations, China has spent approximately $200 billion on BRI-related programs, with Morgan Stanley estimating that China could spend $1.2-1.7 trillion by

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[77] Lo, T. Wing, Dana Siegel, and Sharon I. Kwok (editors). *Organized Crime and Corruption Across Borders: Exploring the Belt and Road Initiative*. New York, NY: Routledge, 2020.

[78] Chatzky, Andrew, and James McBride. "China's Massive Belt and Road Initiative." CFR Backgrounder. Council on Foreign Relations, January 28, 2020. https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative.

[79] Ibid.

[80] Dollar, David. "Understanding China's Belt and Road Infrastructure Projects in Africa." The Brookings Institution, September 2019. https://www.brookings.edu/wp-content/uploads/2019/09/FP_20190930_china_bri_dollar.pdf.

[81] Standish, Reid. "China's Path Forward Is Getting Bumpy." *The Atlantic*, October 1, 2019. https://www.theatlantic.com/international/archive/2019/10/china-belt-road-initiative-problems-kazakhstan/597853/.

2027.[82] These funds are going toward the 'construction' of the Silk Road Economic Belt and 21st Century Maritime Silk Road.

In their 2018 analysis of BRI in Asia, OECD highlighted China's efforts to construct six economic corridors which constitute the Silk Road Economic Belt:[83] 1) *New Eurasia Land Bridge* connecting Kazakhstan, Russia, Belarus, and Poland to Europe by rail; 2) *China, Mongolia, Russia Economic Corridor*, linking with the New Eurasia Land Bridge; 3) *China, Central Asia, West Asia Economic Corridor*, connecting to Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, Iran, and Turkey; 4) *China Indochina Peninsula Economic Corridor*, including Vietnam, Thailand, Lao PDR, Cambodia, Myanmar, and Malaysia; 5) *China, Pakistan Economic Corridor*, connecting Kashgar city in Xinjiang Province with Pakistan via a deep-water port; and 6) *China, Bangladesh, India, Myanmar Economic Corridor*, the status of which has become more tenuous given recent hostilities between China and India. India is also, as of June 2020, not a BRI participating country. The 21st Century Maritime Silk Road will include African nations Egypt, Ethiopia, Kenya, Morocco, and South Africa, as well as Indonesia, Korea, New Zealand, Panama, and the Maldives.[84] These economic corridors are depicted in Figure 7.

[82] Chatzky, Andrew, and James McBride. "China's Massive Belt and Road Initiative." CFR Backgrounder. Council on Foreign Relations, January 28, 2020. https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative.

[83] Organisation for Economic Cooperation and Development. "China's Belt and Road Initiative in the Global Trade, Investment and Finance Landscape." OECD Business and Finance Outlook 2018. Paris, France: OECD Publishing, 2018. https://www.oecd.org/finance/Chinas-Belt-and-Road-Initiative-in-the-global-trade-investment-and-finance-landscape.pdf.

[84] Ibid.

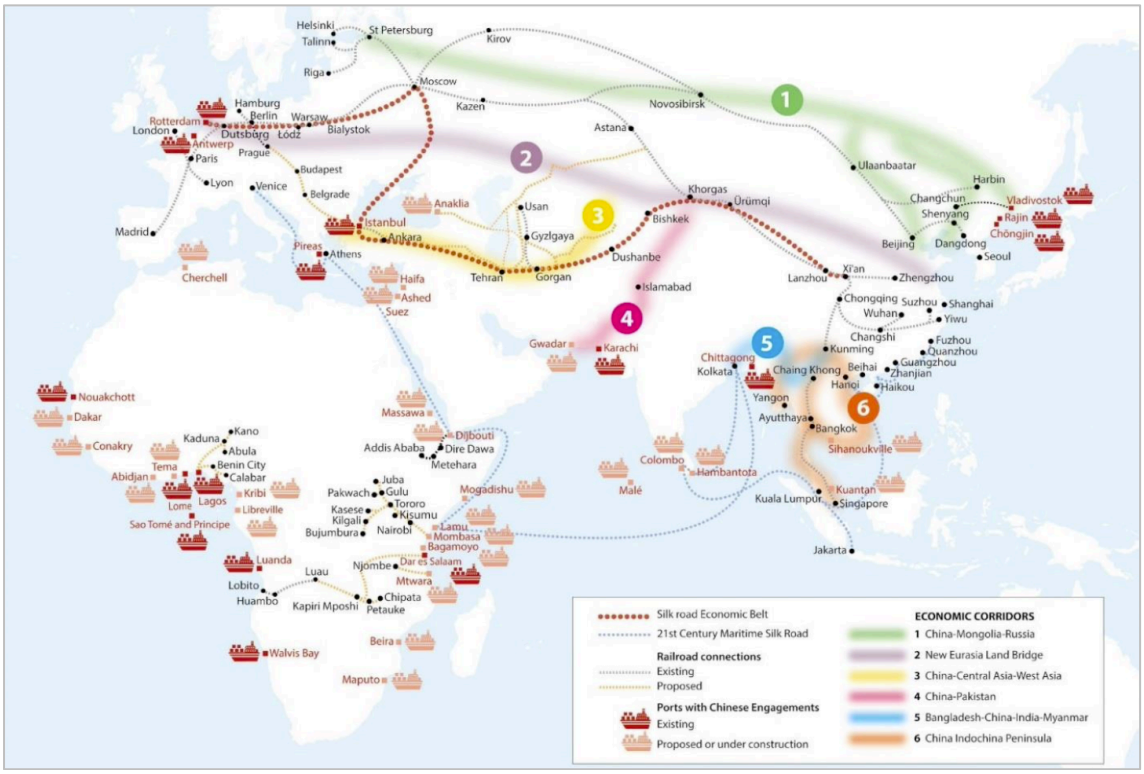


**Figure 7. Proposed BRI Economic Corridors and Projects Across Asia, Africa, and Europe.** Image courtesy of OECD.[85]

## Criticisms of BRI

China's Belt and Road Initiative has the potential to address infrastructure limitations in BRI partner countries. However, BRI has received criticism, particularly from Western nations like the United States, for its role in expanding China's soft power influence outside of East Asia and engagement in 'debt trap diplomacy,' with the potential to spur a wave of debt crises in the developing world.

In their recent book reviewing potential criminal activity along BRI, Lo et al coined the term "OBORization," referring to the evolution of countries participating in BRI. They describe OBORization as a change with two meanings:

[85] Organisation for Economic Cooperation and Development. "China's Belt and Road Initiative in the Global Trade, Investment and Finance Landscape." OECD Business and Finance Outlook 2018. Paris, France: OECD Publishing, 2018. https://www.oecd.org/finance/Chinas-Belt-and-Road-Initiative-in-the-global-trade-investment-and-finance-landscape.pdf.

> It refers to the process of the massive development of infrastructure in the OBOR region that helps increase trade, cultural exchanges, and government collaborations led by China for the purpose of speeding up the economic development in the region. It also refers to the process of using economic and other development alternatives to attract OBOR countries and make them more economically dependent on China's financial support, more accepting politically and supportive of Chinese policies and global leadership, and legally more subject to the alternative modes of arbitration, governance, and globalization processes constructed and administered by China.[86]

The idea of OBORization captures the critique that BRI is a tool for the Chinese government to expand its soft power past its immediate regional sphere of influence. BRI will give China the ability to open new corridors for trade and gain access to new natural resources, while attempting to "win over local populations and governments by funneling investment, jobs, and economic growth in their direction."[87] This critique aligns directly with President Xi's vision of China as a more assertive global player, building up a network of economic connections outside of the influence of the West with China at its core.[88] Not only does BRI allow China to promote its authoritarian model of governance, but the United States in particular has raised concerns that BRI may open the door for regional Chinese military expansion in BRI partner nations, challenging Western nations' security interests.[89] China's growth across Africa, Asia, and into Europe coincides with the United States easing back from the Obama era "pivot to Asia," as well as a move toward protectionism and limited diplomatic engagements in these regions, which lends itself to the concern of critics that BRI is an avenue for China to become a regional hegemon.

BRI has raised concerns about the sustainability of debt relations in Asia and Africa, explored in the next section.[90] As commercial loan terms facilitate debt crises, the process of countries taking on debt from China in the form of low-interest loans is raising fears that BRI may

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[86] Wing, Lo T., Siegel, Dina, and Sharon I. Kwok. *Organized Crime and Corruption Across Borders: Exploring the Belt and Road Initiative*. Lo, T. Wing, Dana Siegel, and Sharon I. Kwok (editors). New York, NY: Routledge, 2020.

[87] Standish, Reid. "China's Path Forward Is Getting Bumpy." *The Atlantic*, October 1, 2019. https://www.theatlantic.com/international/archive/2019/10/china-belt-road-initiative-problems-kazakhstan/597853/.

[88] Nantulya, Paul. "Implications for Africa from China's One Belt One Road Strategy." Africa Center for Strategic Studies, March 22, 2019. https://africacenter.org/spotlight/implications-for-africa-china-one-belt-one-road-strategy/.

[89] Chatzky, Andrew, and James McBride. "China's Massive Belt and Road Initiative." CFR Backgrounder. Council on Foreign Relations, January 28, 2020. https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative.

[90] Belt and Road News Current Affairs Correspondent Africa. "Is Chinese Investment a Threat to Nigeria?" *Belt and Road News*, August 12, 2019. https://www.beltandroad.news/2019/08/12/is-chinese-investment-a-threat-to-nigeria/.

lead countries to invest in projects they may be unable to pay off.[91] From 2015-2017, Angola was the largest borrower from China, followed by Kenya, South Africa, and Egypt (Figure 8).

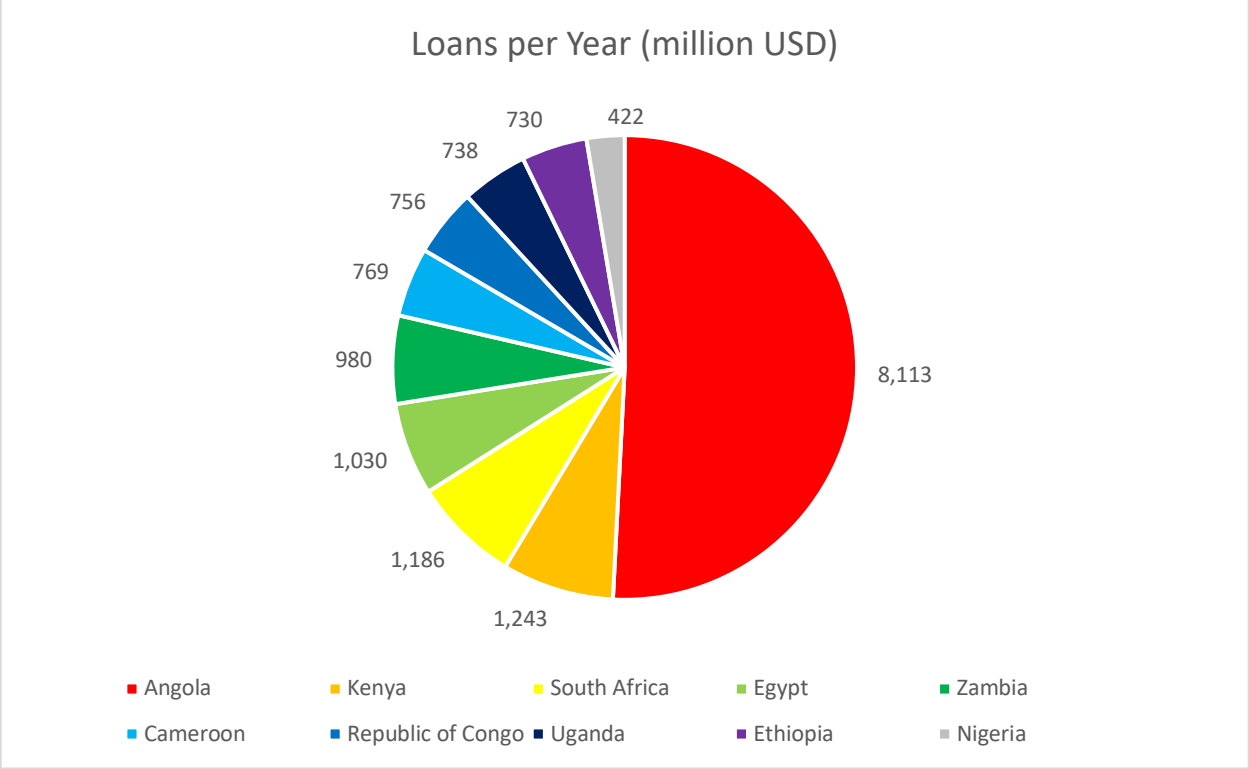


**Figure 8. Loan Activity between China and Africa.**
Adapted from Dollar, 2019 "Table 1: Largest African borrowers from China (2015-2017)."[92]

The minimal transparency from the Chinese government regarding the terms and implementation of these projects also foments mistrust from outside observers and is a point of contention in discussions of BRI's global economic impact.

[91] Chatzky, Andrew, and James McBride. "China's Massive Belt and Road Initiative." CFR Backgrounder. Council on Foreign Relations, January 28, 2020. https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative.; Nantulya, Paul. "Implications for Africa from China's One Belt One Road Strategy." Africa Center for Strategic Studies, March 22, 2019. https://africacenter.org/spotlight/implications-for-africa-china-one-belt-one-road-strategy/.

[92] Dollar, David. "Understanding China's Belt and Road Infrastructure Projects in Africa." The Brookings Institution, September 2019. https://www.brookings.edu/wp-content/uploads/2019/09/FP_20190930_china_bri_dollar.pdf.

**BRI in Africa**

China began engagement with Africa on a large scale in the late 1950s which carried through the 1970s, as countries across the continent gained their independence (Appendix 1). Economic investment with Africa took off in the early 1990s, as China identified four major benefits to China of trade with Africa: 1) Africa's natural resources could boost the Chinese domestic economy; 2) Africa's large population could serve as a market for Chinese goods; 3) African countries were desirable for mineral prospecting, jobs for Chinese laborers, and infrastructure; and 4) Several African countries were suitable for Chinese investment.[93]

China overtook the United States in 2010 as Africa's largest economic partner. BRI will deepen this connection as officials in the Chinese government suggest that BRI illustrates China's commitment to Africa.[94] As of last year, over 40 out of Africa's 55 states were signatories to memoranda of understanding for infrastructure projects in their countries.[95]

The initial focus of BRI in Africa was on East Africa. The first major project was a 290-mile standard gauge railway in Kenya, which opened in 2018, and connected Nairobi to Mombasa.[96] It was the largest foreign investment in Kenya since the country's independence in 1963. Other projects include an electric railway connecting Addis Ababa, Ethiopia, to Djibouti, where the Maritime Silk Road connects ports across Africa and Asia.[97] Currently outside of Chinese BRI-related funding, the Chinese government has also offered its support for the pan-African high-speed rail network proposed by the African Union.[98]

Although one stated purpose of BRI is to provide development assistance for partner countries, China's policy of utilizing Chinese labor for these projects has brought over 200,000

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[93] Shinn, David H., and Joshua Eisenman. *China and Africa: A Century of Engagement*. Philadelphia, PA: University of Pennsylvania Press, 2012.

[94] Nantulya, Paul. "Implications for Africa from China's One Belt One Road Strategy." Africa Center for Strategic Studies, March 22, 2019. https://africacenter.org/spotlight/implications-for-africa-china-one-belt-one-road-strategy/.

[95] Dahir, Abdi Latif. "These Are the Countries Not Signed to China's Belt and Road Project." *Quartz Africa*, September 30, 2019. https://qz.com/africa/1718826/the-african-countries-not-signed-to-chinas-belt-and-road-plan/.

[96] Nantulya, Paul. "Implications for Africa from China's One Belt One Road Strategy." Africa Center for Strategic Studies, March 22, 2019. https://africacenter.org/spotlight/implications-for-africa-china-one-belt-one-road-strategy/.

[97] Ibid.

[98] Belt and Road News Current Affairs Correspondent Africa. "Is Chinese Investment a Threat to Nigeria?" *Belt and Road News*, August 12, 2019. https://www.beltandroad.news/2019/08/12/is-chinese-investment-a-threat-to-nigeria/.

Chinese workers to Africa,[99] particularly to Angola (81,154 workers), Ethiopia (19,470 workers), and Nigeria (17,314 workers) (Table 1). Chinese contract laborers have been part of the Chinese diaspora in Africa for several decades, and typically arrive to their African destination alone, don't often speak the local language, and return to China at the end of their contract term.[100] The presence of Chinese workers employed for construction on BRI projects is another point of contention, as those jobs could be employing African workers instead of importing them from abroad.[101] Aside from Chinese contract laborers, Chinese professionals at diplomatic posts and companies as well as businesspeople and traders make up the Chinese diaspora in Africa.[102]

**Table 1. Number of Chinese Workers Employed in Africa, 2012-2017.** Adapted from Dollar, 2019 *Table 2* "*Chinese Workers in Africa.*"[103]

| Country | 2012-2014 | 2015-2017 | Total Workers 2012-2017 |
|---|---|---|---|
| Angola | 48,120 | 33,034 | 81,154 |
| Kenya | 3,430 | 8,099 | 11,529 |
| South Africa | 3,436 | 966 | 4,402 |
| Egypt | 740 | 1,899 | 2,639 |
| Zambia | 6,659 | 7,311 | 13,970 |
| Cameroon | 2,798 | 3,585 | 6,383 |
| Republic of Congo | 10,120 | 6,711 | 16,831 |
| Uganda | 1,737 | 4,529 | 6,266 |
| Ethiopia | 9,630 | 9,840 | 19,470 |
| Nigeria | 8,057 | 9,257 | 17,314 |
| Average | 9,473 | 8,523 | |
| **Rest of Africa** | **2,707** | **3,107** | **5,814** |

China's engagement in Africa through BRI is a relatively new method of interaction with the continent, and is not homogeneous between nations, but builds upon a nearly 60-year history

[99] Nantulya, Paul. "Implications for Africa from China's One Belt One Road Strategy." Africa Center for Strategic Studies, March 22, 2019. https://africacenter.org/spotlight/implications-for-africa-china-one-belt-one-road-strategy/.

[100] Shinn, David H., and Joshua Eisenman. *China and Africa: A Century of Engagement*. Philadelphia, PA: University of Pennsylvania Press, 2012.

[101] Dollar, David. "Understanding China's Belt and Road Infrastructure Projects in Africa." The Brookings Institution, September 2019. https://www.brookings.edu/wp-content/uploads/2019/09/FP_20190930_china_bri_dollar.pdf.

[102] Shinn, David H., and Joshua Eisenman. *China and Africa: A Century of Engagement*. Philadelphia, PA: University of Pennsylvania Press, 2012.

[103] Dollar, David. "Understanding China's Belt and Road Infrastructure Projects in Africa." The Brookings Institution, September 2019. https://www.brookings.edu/wp-content/uploads/2019/09/FP_20190930_china_bri_dollar.pdf.

of China-Africa relations. China has shown no desire to step away from the continent, instead continuing to invest and actively seek out new opportunities within BRI partner countries while attempting to cultivate new connections with countries that are unaffiliated with BRI.

The growing Chinese footprint in Africa via BRI coincides with increased poaching pressure on African pangolins. This section laid the groundwork which subsequent chapters will build upon. The next section of this report describes the structure of this study to determine BRI's influence on pangolin conservation.

## PART THREE: REPORT STRUCTURE

Immediately preceding the CITES Appendix I pangolin listing, the IUCN SSC Pangolin Specialist Group submitted a comprehensive report to CITES at the 17th Conference of the Parties. In this report, the Pangolin Specialist Group noted that as China's economic connections increase in Africa, increased wildlife exploitation will likely be observed.[104]

This idea was expanded upon in a 2019 *Nature* article on the environmental impact of BRI on wildlife, as Mohammad Farhadinia and his colleagues proposed that BRI, specifically the planned China-Pakistan Economic Corridor, would have detrimental impacts on large carnivores in the project's geographic footprint. Their concern was that BRI would lead not only to environmental degradation across Asia, but facilitate legal and illegal wildlife trade.

As BRI accelerates construction of infrastructure, technological connectivity, new trade routes, and governmental cooperation, there is an elevated risk of corruption, economic and organized crime, and trafficking of illegal goods and services.[105]

The purpose of this study is to determine if BRI in Africa has placed additional pressure on the four species of African pangolins and to predict the potential impacts BRI will have on African pangolin conservation in the future.

Chapter One introduced the dual foci of this study: African pangolins and BRI. Chapter Two addresses the demand component of pangolin conservation, with particular emphasis on TCM as a vehicle for pangolin demand. In this chapter, I analyze the level of Chinese demand for

[104] International Union for the Conservation of Nature SSC Pangolin Specialist Group. "The Status, Trade and Conservation of Pangolins (Manis Spp.)." Information Document for the 17th Meeting of the Conference of Parties to CITES. Johannesburg, South Africa, 2016.

[105] Lo, T. Wing, Dana Siegel, and Sharon I. Kwok (editors). *Organized Crime and Corruption Across Borders: Exploring the Belt and Road Initiative*. New York, NY: Routledge, 2020.

pangolins, to the extent it is known, and review the role of the Chinese healthcare industry in contributing to growing pangolin demand. Chapter Three is an analysis of the pangolin trafficking supply chain, from source countries in Africa to destination countries in Southeast and East Asia. This chapter includes an assessment of pangolin seizure events from 2010-2019, identification of prominent origin, transit, and destination countries as well as methods of trafficking and the structures of transnational crime organizations engaged in pangolin trafficking activity. It concludes with a case study of the relationship between the PRC and Nigeria through BRI, with a focus on Nigeria due to its role as a rapidly growing wildlife trafficking hub and the African nation most implicated in the pangolin trafficking supply chain. Chapter Four concludes this study by reiterating key findings, highlighting the many data gaps inherent in this work, offering policy recommendations for the United States and China, and considering the position of pangolin conservation as a policy issue in the current era of COVID-19 and rising geopolitical tensions between the U.S. and China.

# Chapter Two: BRI and Pangolin Demand

Across Asia, notably in China and Vietnam, pangolin consumption is scale-to-tail. Although pangolins have been internationally protected since 2017, trafficking of pangolins for their scales and meat continues at an accelerating pace. The cause? Demand. Two types of demand are particularly prevalent in China: the use of scales in TCM and the consumption of meat as a restaurant delicacy.

In order to understand the impact of Belt and Road on demand for pangolins and their derivatives, Part One of this chapter discusses the significance of pangolins to Chinese culture, through their presence in TCM and consumption in restaurants. In Part Two, I ask two essential questions: 1) How has BRI influenced demand for pangolins? and 2) How will BRI influence demand for pangolins in the future. Part Three concludes the chapter with a discussion of key themes, data gaps, and an analysis of how COVID-19 has influenced demand for pangolins.

## PART ONE: CHINESE DEMAND FOR PANGOLINS

Demand for pangolins in China and Vietnam is persistent and has increased in recent years. According to the UNODC, per the World Wildlife Seizures (World WISE) database, approximately 71% of pangolin seizures from 2007-2018 were destined for China, with 19 percent to Vietnam.[106] Vietnam acts as both its own demand hub for pangolin products and as an avenue for wildlife to be trafficked into China, making it an essential piece of the pangolin conservation outlook.[107] However, as accounts for the majority of pangolin TCM demand in the region, reviewing trends in TCM and pangolin demand are essential to understanding this issue.

As China rises in affluence and increases its global profile, demand for TCM – and its subsequent consequence of increasing pangolin demand – is also on the rise. In the 2010s, these factors combined to cause the size of the wildlife black market to skyrocket and decimate pangolin populations.[108]

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[106] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[107] United States Agency for International Development. "Research Study on Consumer Demand for Elephant, Rhino and Pangolin Parts and Products in Vietnam." Hanoi, Vietnam, 2018. https://www.traffic.org/publications/reports/consumer-demand-for-rhino-elephant-and-pangolin-products-in-vietnam/.

[108] Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

**History and Significance of TCM in China and Across the Diaspora**

TCM as a practice originated over 5,000 years ago.[109] Initial references to TCM in China occurred during the Zhou Dynasty (1122 BC) and the first pharmacopoeias were assembled in the Han period (206-220 BC).[110] In the modern era, TCM was popularized by Mao Zedong, who encouraged the people of China to utilize TCM to treat a range of ailments. During the Mao era, TCM spread across Asia as migrants leaving China continued practicing TCM and shared its framework and remedies with others in their new countries.[111] Today, TCM in its varied forms – acupuncture, herbal and wildlife-based medicine, massage, Tai Chi, and others – is prevalent globally.[112] TCM is often used to treat chronic conditions or those that cannot be cured by Western medicine, and in the United States, Johns Hopkins recommends that TCM not be used "for serious conditions, but it may be beneficial when used as complementary therapy."[113] Acupuncture and herbal treatments are the most prevalent forms of TCM used in the United States and Europe. Combining TCM herb treatments with Western medicine does carry risks of adverse effects,[114] and the spread of TCM in Western nations is hampered by limited training for clinicians, pharmacists, and patients who self-administer,[115] which is a roadblock TCM practitioners will have to overcome while promoting the practice globally.

In China, however, TCM's long history and central role in Chinese medical practice gives TCM a firm position in Chinese identity. As a result, demand for TCM products in China has proven very difficult to change. According to Feng Yibin, associate director of Hong Kong University's School of Chinese Medicine, "It's thousands of years of culture and history"[116] and a thousand years of TCM makes it a formidable force for wildlife demand. The use of TCM for

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[109] Mainka, Susan, and Judy Mills. "Wildlife and Traditional Chinese Medicine: Supply and Demand for Wildlife Species." *Journal of Zoo and Wildlife Medicine* 26, no. 2 (1995): 193–200.

[110] Ibid.

[111] Ibid.

[112] Lu, Winston and Dominic Lu. "Impact of Chinese Herbal Medicine on American Society and Health Care System: Perspective and Concern." *Hindawi*, 2014. https://www.hindawi.com/journals/ecam/2014/251891/.

[113] No Author. "Chinese Medicine." Hopkins Medicine, n.d. https://www.hopkinsmedicine.org/health/wellness-and-prevention/chinese-medicine.

[114] Chung, Vincent C.H., Polly H.X. Ma, Chun Hong Lau, Samuel Y.S. Wong, Eng Kiong Yeoh, and Sian M. Griffiths. "Views on Traditional Chinese Medicine Amongst Chinese Population: A Systematic Review of Qualitative and Quantitative Studies." *Health Expectations* 17, no. 5 (May 31, 2012). https://doi.org/10.1111/j.13697625.2012.00794.x.

[115] Lu, Winston and Dominic Lu. "Impact of Chinese Herbal Medicine on American Society and Health Care System: Perspective and Concern." *Hindawi*, 2014. https://www.hindawi.com/journals/ecam/2014/251891/.

[116] Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

primary care in China, complemented by Western medicine in some cases, represents the 'China style approach' to medicine, suggesting that while Western medicine may become more popular in China it will be utilized in tandem with TCM.[117]

TCM is guided by the concept of *qi*, an energy both unique to the individual and flowing through the body on meridians to maintain health.[118] In order to treat health imbalances, TCM acts to bring *qi* back into balance through use of diet, movement, and treatments based on combinations of plant and animal species. The efficacy of TCM as a whole is questioned by the scientific community, which points to limited studies providing evidence that TCM is more effective than Western medicine, or effective at all.[119] This is primarily due to the combination of products combined to create one remedy, which is unique to the individual and cannot be replicated in large-scale clinical trials. In some cases, use of animal-based TCM products has led to detrimental side effects for patients prescribed these treatments.

**Species Used**

The *Chinese Pharmacopoeia* contains remedies utilizing 12,772 types of TCM resources, 1,574 of which are wildlife or their derivatives.[120] Although demand for TCM has been present for millennia, the practice is partly responsible for the high levels of wildlife exploitation observed today. Population growth, coupled with increased buying power and interest in traditional remedies in China, has led to an unsustainable burden of TCM on wildlife populations and an inability to meet market demand.[121]

The species most severely affected by TCM demand in Southeast and East Asia are the tiger, rhinoceros, saiga antelope, and pangolin (Figure 9).

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[117] Hooson, Jacob, Tang Zhihao, and Shan Juan. "TCM Touted for Big Role Internationally." *China Daily*, November 24, 2016. english.www.gov.cn/news/top_news/2016/11/24/content_281475798968947.htm.

[118] Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

[119] Ibid.

[120] Liu, Zhao, Zhigang Jiang, Hongxia Fang, Chunwang Li, Aizi Mi, Jing Chen, Xiaowei Zhang, et al. "Perception, Price and Preference: Consumption and Protection of Wild Animals Used in Traditional Medicine." *PLOS ONE* 11, no. 3 (March 1, 2016): 1–19. https://doi.org/DOI:10.1371/journal.pone.0145901.

[121] Ibid.

**Figure 9. Species including tiger, rhinoceros, and saiga are heavily impacted by their role in TCM.** Photos courtesy of National Geographic, Nepr.net, and World Wildlife Fund.[122]

Demand in Asian markets drives poaching and trafficking of tigers, with tiger bone, skin, claws, teeth, blood, and other derivatives used in TCM and other medicinal practices in Southeast and East Asia. Tiger bone in particular is traditionally one of the most important wildlife-based TCM ingredients, used to treat "ulcers, rat-bite sores, abdominal pain, typhoid fever, malaria, and hydrophobia, but especially to combat muscle cramps, migratory joint pain, pain in the bones, and rheumatism."[123] Tigers face a range of challenges in addition to wildlife crime, including habitat loss, the pet trade, and human-tiger conflict. Approximately 3,900 tigers remain in the wild today and trafficking for the purposes of TCM continues to be a major driver of population decline.[124]

The primary threat to rhinoceros is poaching for their horn, which is made of keratin and the same material as human hair and fingernails – and pangolin scales. In TCM, rhino horn is "used

[122] Photo credits clockwise from left: Tiger photo by Kate Brooks, Redux, via National Geographic (https://www.nationalgeographic.com/animals/2018/07/wildlife-watch-news-captive-tiger-farms-trafficking-investigation-vietnam-laos/); rhino photo by Raymond Roig, AFP/Getty Images, via Nepr.net (https://www.nepr.net/post/sothebys-and-bonhams-bow-pressure-ban-sale-rhino-horn-artifacts#stream/0); saiga photo by Andrew Gilev, via World Wildlife Fund (https://www.worldwildlife.org/pages/establishing-a-network-of-artificial-watering-holes-for-saiga-antelope-in-russia).

[123] van Uhm, Daan. *Organized Crime and Corruption Across Borders: Exploring the Belt and Road Initiative*. Lo, T. Wing, Dana Siegel, and Sharon I. Kwok (editors). New York, NY: Routledge, 2020.

[124] World Wildlife Fund. "Species: Tiger." World Wildlife Fund, n.d. https://www.worldwildlife.org/species/tiger.

to cool the blood, alleviate fever, erythema, purpura, nosebleeds, convulsion and cramp, as well as heart disease."[125] Poaching of rhino for their horn has led several rhino species toward extinction. This is most notable in the Vietnamese subspecies of the Javan rhino, which went extinct in 2011, and the northern white rhino, which is now functionally extinct after the last male, Sudan, died in 2018. The primary markets for rhino horn are Vietnam and China, and after a brief lull in rhino poaching, the illegal trade of rhino horns has increased in recent years.

Saiga antelope (*Saiga tatarica*) are found in Kazakhstan, Mongolia, Russia, and Uzbekistan.[126] These ungulates are poached for their horns and its use in TCM, which has led to population declines of 95% in the last 15 years.[127] Saiga horn is used in TCM to "calm the liver, as a detoxification, to assuage epilepsy, and (similar to rhino horn) to alleviate (infant) fevers by sedation.[128]

Many other species are utilized in TCM that are not mentioned here. This includes moon bears (*Ursus thibetanus*), whose gallbladder is harvested for 'bear bile.' Water buffalo (*Bubalus bubalis*) is used as an alternative to rhino horn. Chinese alligators (*Alligator sinensis*) are poached for their meat and its use in TCM. The use of wildlife for TCM is vast and variable, and species are affected not only by demand for their products but for their potential use as an alternative to other, more heavily exploited, wildlife.

**Pangolins in TCM**

Pangolin scales are the primary pangolin derivative used in TCM (compared to whole pangolins, meat, claws, or skins) and have been used in TCM for centuries. Scales can be dried, ground into powder, and consumed in powder or pill form. Scale powder can be inhaled, used to create a paste, or combined with other herbal and wildlife-based supplements to form a remedy that is unique to the ailment it is created to treat. As TCM products, pangolins and their medical derivatives are sold as part of China's TCM industry and in smaller stores across mainland China.

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[125] van Uhm, Daan. *Organized Crime and Corruption Across Borders: Exploring the Belt and Road Initiative*. Lo, T. Wing, Dana Siegel, and Sharon I. Kwok (editors). New York, NY: Routledge, 2020.

[126] IUCN SSC Antelope Specialist Group. 2018. *Saiga tatarica*. *The IUCN Red List of Threatened Species* 2018: e.T19832A50194357. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T19832A50194357.en. Downloaded on 27 June 2020.

[127] van Uhm, Daan. *Organized Crime and Corruption Across Borders: Exploring the Belt and Road Initiative*. Lo, T.Wing, Dana Siegel, and Sharon I. Kwok (editors). New York, NY: Routledge, 2020.

[128] Ibid.

Although pangolin scales are composed of keratin and have no proven scientific healing potential, a mixture of the placebo effect and cultural significance of TCM lead to continued use and TCM as an embedded part of the Chinese medical landscape.[129] TCM, and the pangolin as a component of this practice, persists because of the power of belief in its healing properties.

Of the over 1,500 remedies requiring wildlife ingredients, approximately 500 call for the use of pangolin.[130] The Chinese pangolin (*M. pentadactyla*), now considered commercially extinct due to overexploitation for TCM, is the only pangolin species formally listed in the *Chinese Pharmacopoeia*[131] though use of the other seven pangolin species to meet demand for TCM is a near certainty.

The purported cures facilitated by pangolin-based TCM products are wide-ranging and stem from a belief that pangolin scales clear blockages in the body.[132] Pangolin scales are used to treat hangovers, swelling, joint pain, and lactation issues, as well as other remedies for arthritis, palsy, skin diseases, and anorexia.[133] In the most extreme form, pangolin scales are also believed to cure cancer.[134]

Approximately 125 alternatives to pangolin scales exist in the *Chinese Pharmacopoeia*, yet demand persists for authentic pangolin scales in TCM.[135] Chinese TCM consumers as a group

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[129] Matsangou, Elizabeth. "The Dark Underbelly of the Traditional Chinese Medicine Boom." *World Finance*, April 23, 2019. https://www.worldfinance.com/markets/the-dark-underbelly-of-the-traditional-chinese-medicine-boom.

[130] Nuwer, Rachel. "Illegal Trade in Pangolins Keeps Growing as Criminal Networks Expand." *National Geographic*, February 11, 2020. https://www.nationalgeographic.com/animals/2020/02/pangolin-scale-trade-shipments-growing/.

[131] MacDonald, James. "The Pangolin Extinction Vortex." *JSTOR Daily*, March 15, 2019. https://daily.jstor.org/the-pangolin-extinction-vortex/.

[132] Zhang, Sunny, Alec Wall, and Matthew Sima. "Can a Synthetic Substitute Save the Pangolin?" *New Security Beat*. September 19, 2019. https://www.newsecuritybeat.org/2019/09/synthetic-substitute-save-pangolin/.

[133] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.; Nuwer, Rachel. "Illegal Trade in Pangolins Keeps Growing as Criminal Networks Expand." *National Geographic*, February 11, 2020. https://www.nationalgeographic.com/animals/2020/02/pangolin-scale-trade-shipments-growing/.

[134] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.; Su, Alice. "It's a Mammal. It Looks Like an Artichoke. And China Is Driving It Toward Extinction." *Los Angeles Times*. September 1, 2019. https://www.latimes.com/world-nation/story/2019-08-31/its-a-mammal-it-looks-like-an-artichoke-and-china-is-driving-it-toward-extinction.

[135] Bale, Rachael. "Pangolin Scale Medicines No Longer Covered by Chinese Insurance." *National Geographic*, August 29, 2019. https://www.nationalgeographic.com/animals/2019/08/pangolin-traditional-medicine-not-covered-insurance/.

have a strong preference for wild TCM components over alternatives that are synthetic or farmed.[136] The idea that 'wild is best' is enduring in the minds of many TCM consumers and practitioners, which complicates efforts by the conservation community to present viable synthetic alternatives to pangolin scales and lessen the burden on wild-sourced pangolins.

**TCM in China's Medical Industry**

TCM holds a sizeable portion of the Chinese pharmaceutical market. TCM is valued at USD$130 billion in 2016[137] and accounts for 31% of China's USD$420 billion market.[138] TCM grew an additional 20% throughout 2017. Through TCM in the pharmaceutical industry, in Chinese hospitals, and for public sale in shops and online, TCM has become a significant piece of China's domestic pharmaceutical industry.

In 1992, China had 2,297 TCM hospitals,[139] and by the end of 2014 the number of hospitals focusing on TCM practice grew to 3,700 domestically, bringing in USD$105 billion in domestic revenue in 2014.[140] As of July 1, 2017, per a TCM law passed by China's National People's Congress, TCM will be integrated by county governments into new publicly-funded hospitals, maternity wards, and pediatric clinics.[141] Today, the total number of hospitals engaging with TCM is likely much higher than the value reflected in the 2014 statistic.

Hospitals are also avenues for sales of TCM-based pharmaceutical products in China. Nearly 200 Chinese pharmaceutical companies, such as Kangmei Pharmaceutical, Tong Ren Tang, and China Traditional Medicine Holdings, are legally permitted to produce TCM products containing pangolins, in a domestic legislative loophole in China allowing pangolin use for

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[136] Liu, Zhao, Zhigang Jiang, Hongxia Fang, Chunwang Li, Aizi Mi, Jing Chen, Xiaowei Zhang, et al. "Perception, Price and Preference: Consumption and Protection of Wild Animals Used in Traditional Medicine." *PLOS ONE* 11, no. 3 (March 1, 2016): 1–19. https://doi.org/DOI: 10.1371/journal.pone.0145901.

[137] No Author. "China's TCM Industry Grows 20%." *Xinhua News Agency*, November 24, 2017. http://www.chinadaily.com.cn/business/2017-11/24/content_34927828.htm.

[138] Chen X., Xue S., Lv M., Wang R. (2019) Pharmaceutical Industry in China: Policy, Market and IP. In: Liu KC., Racherla U. (eds) Innovation, Economic Development, and Intellectual Property in India and China. ARCIALA Series on Intellectual Assets and Law in Asia. Springer, Singapore. https://doi-org.ezproxy.lib.utexas.edu/10.1007/978-981-13-8102-7_10.

[139] Mainka, Susan, and Judy Mills. "Wildlife and Traditional Chinese Medicine: Supply and Demand for Wildlife Species." *Journal of Zoo and Wildlife Medicine* 26, no. 2 (1995): 193–200.

[140] McGregor, Tom. "China Adopts More Effective TCM Law." *CCTV.com*, December 27, 2016. https://english.cctv.com/2016/12/27/ARTIudJzIZG9zJ0VT7jqqwCG161227.shtml.

[141] Ibid.

TCM.[142] Once produced, pangolin-based pharmaceuticals are prescribed and sold in Chinese hospitals, creating a continuing stream of demand for pangolin products in TCM. Through this supply chain, TCM products are embedded within medical practice in China, external to pharmaceutical exports.

As of 2016, Chinese pharmaceutical companies were able to produce 66 different products containing pangolin, requiring an estimated 400 tons of pangolin scales every year across the full industry.[143] The Chinese government maintains that pangolin scales for pharmaceutical production are sourced by pre-existing stockpiles from the 1960s, supplying 26 tons of scales to the pharmaceutical industry every year.[144] The size of the stockpile is not made publicly available by the Chinese government. However, it is highly unlikely that the pre-existing stockpile can meet continuing demand for pangolin scales used in TCM and, coupled with the difficulty in distinguishing pangolin scales by species, some individuals in the conservation community assert that the Chinese government stockpile may facilitate laundering of illegally procured pangolins.

**Restaurant Consumption**

Pangolins are served as a delicacy in Chinese restaurants in a variety of forms. Whether a pangolin product is offered as an infusion in rice wine, bones cooked into a pudding, an infant pangolin, or a live pangolin processed in front of customers at the dinner table, pangolins are considered a status symbol for the Chinese upper class.[145]

Although the sale of pangolins is banned in China, lax enforcement of pangolin sales in restaurants allows the practice to continue 'under the table.' In instances where restaurants are illegally selling pangolins in contravention of domestic law, it leads to overall increased demand for pangolin products and continues to fuel the trade of these species.

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[142] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[143] Ibid.

[144] Denyer, Simon. "China's Push to Export Traditional Medicine May Doom the Magical Pangolin." *The Washington Post*, July 21, 2018. https://www.washingtonpost.com/world/asia_pacific/chinas-push-to-export-traditional-medicine-may-doom-the-magical-pangolin/2018/07/20/8d8c52d4-7ef1-11e8-a63f7b5d2aba7ac5_story.html.

[145] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

Anecdotally, demand for pangolins in restaurants appears to be a smaller driver of pangolin exploitation than industrial scale use of pangolins in TCM. Quantitative analysis of pangolin demand in restaurants is lacking; however demand for use in restaurants should not be ignored in interventions to conserve pangolins.[146] Once a market is established for a wildlife product, like pangolin meat in restaurants, it becomes much more difficult to stop. Restaurant consumption has the potential to become a larger driver of pangolin exploitation if left unaddressed.

**Demand for Pangolins Extends Outside of China**

Aside from consumption in Asian countries, including Cambodia, Lao PDR, Myanmar, Malaysia, Indonesia, the Philippines, and Vietnam, pangolins are also consumed in African range states.

Historically, pangolins have been hunted as bushmeat, for their scales used in traditional African bush medicine, and for other cultural uses, such as protection from witchcraft, bad luck, and evil forces. Similar to their use in Southeast Asia and China, pangolins are consumed from head to tail to treat a wide variety of health ailments, including stroke, high blood pressure, and stomach problems. Pangolin meat is considered a delicacy and has been identified for sale in Nigeria, Botswana, Ghana, Sierra Leone, Zimbabwe, and Mozambique. In Nigeria, local populations and Chinese travelers are the most frequent clients.

Consumption of pangolins for these purposes in African range states is increasing, while African pangolin populations are facing increased trafficking stress along the Africa to Asia supply chain.

Although pangolins are consumed outside of China, the focus of this study is on the impact of BRI on African pangolins. In order to isolate BRI as a potential driver of pangolin exploitation, an emphasis on China was necessary since China accounts for the largest share of the global market, followed closely by Vietnam, for pangolin products.

Krishnasamy, Kanitha, and Monica Zavagli. "Southeast Asia: At the Heart of Wildlife Trade." Petaling Jaya, Malaysia: TRAFFIC, 2020. https://www.traffic.org/publications/reports/renewed-game-plan-needed-to-tackle-southeast-asias-massive-wildlife-trafficking-problem/.

Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[146] Hornor, Faith, and Amanda Shaver. "Beyond the Scales: Pangolin Meat Trade in Asia." *C4ADS Blog* (blog), February 26, 2020. https://c4ads.org/blogposts/pangolin-trade-in-asia.

## PART TWO: BRI INFLUENCES ON GLOBAL PANGOLIN DEMAND

### Research Questions

In order to understand pangolin demand as it may be influenced by BRI, this study asks two research questions: 1) How has BRI influenced demand for pangolins outside of China? and 2) How will BRI influence demand for pangolins outside of China in the future?

### Question 1: How has BRI Influenced Demand for Pangolins Outside of China?

Analysis of the connections between BRI and TCM suggests that BRI has been an effective vehicle for global expansion of TCM. Through the construction of TCM centers in BRI partner countries, exports of TCM and related products to BRI countries, and the collaboration with China-based pharmaceutical companies and BRI countries, China has effectively introduced TCM to the world. Increased global demand for TCM, coupled with the current role of pangolins in TCM remedies, suggest that BRI has contributed to a heightened demand for pangolin TCM products and placed additional pressure on African pangolin species.

#### *Construction of TCM Centers and Pharmaceutical Connectivity*

TCM centers and pharmaceutical exports provide the main outlet for China to increase demand for TCM outside of China. The TCM Belt and Road Initiative Plan (2016-2020) had a stated goal of constructing 30 TCM centers internationally in BRI countries by 2020.[147] In 2017, 17 TCM centers had been constructed along the Belt and Road, in countries including Hungary, Kazakhstan, and Malaysia. During a May 2018 speech, President Xi reiterated the importance of reaching this goal and stated that 57 TCM centers were completed or in development in BRI nations.[148]

Pharmaceutical companies producing TCM are key to BRI outreach, not only in shipping their product globally but also in developing connections with BRI countries. Foci, a pharmaceutical company based in northwest China, has exported TCM through direct

[147] Matsangou, Elizabeth. "The Dark Underbelly of the Traditional Chinese Medicine Boom." *World Finance*, April 23, 2019. https://www.worldfinance.com/markets/the-dark-underbelly-of-the-traditional-chinese-medicine-boom.

[148] Calado, Diogo. "Traditional Chinese Medicine as a Bridge to BRI." *China Daily*, August 13, 2018. http://www.chinadaily.com.cn/a/201808/13/WS5b70ea94a310add14f385632.html.

collaboration with 28 countries globally, and additional initiatives to involve pharmaceutical companies in this outreach related to BRI are ongoing.[149]

### *TCM Exports*

Through exporting TCM products abroad, China is encouraging the development of an international demand market for TCM, not only among the Chinese diaspora but among the larger international consumer base of BRI countries. In 2016, China exported TCM products to 185 countries.[150] TCM exports from China increased by 54% from 2016-2017,[151] accounting for USD$3.6 billion in revenue in 2017.[152]

In addition to exporting TCM to BRI countries in Asia and Africa, demand for TCM products has risen in the United States and Europe. Approximately 15% of China's TCM annual export in 2016 went to the United States, with a net worth of USD$526 million.[153] The U.S. and several European countries act as transit hubs and destination markets for trafficked pangolins (see Chapter Three), so the growth of TCM exports to these regions may further solidify demand for pangolins in TCM, though the exact levels of demand for these products in the West are unknown.

### Question 2: How will BRI Influence Demand for Pangolins in the Future?

When looking ahead to the future, current trends around the prominence of TCM in BRI countries are not encouraging for pangolins. President Xi has tied TCM to BRI and does not show any signs of changing course. The WHO recently included TCM in its International Statistical Classification of Diseases and Related Health Problems, acknowledging TCM as a valid medical practice for use globally. There is the potential, however, for change at the domestic level as

[149] Matsangou, Elizabeth. "The Dark Underbelly of the Traditional Chinese Medicine Boom." *World Finance*, April 23, 2019. https://www.worldfinance.com/markets/the-dark-underbelly-of-the-traditional-chinese-medicine-boom.

[150] Ibid.

[151] Ibid.

[152] Larmer, Brook. "China's Mixed Messages on the Global Trade in Endangered Animal Parts." *The New York Times Magazine*, November 27, 2018. https://www.nytimes.com/2018/11/27/magazine/chinas-mixed-messages-on-the-global-trade-in-endangered-animal-parts.html.

[153] Matsangou, Elizabeth. "The Dark Underbelly of the Traditional Chinese Medicine Boom." *World Finance*, April 23, 2019. https://www.worldfinance.com/markets/the-dark-underbelly-of-the-traditional-chinese-medicine-boom.

incremental steps to separate pangolins from TCM, most notably the partial removal from the *Chinese Pharmacopoeia* and grade school textbooks, have been undertaken.

### *The Intertwined TCM and BRI*

As China acts to expand its soft power influence through BRI, TCM is an excellent and unassuming vehicle with which to do so. Many practices within TCM are benign and have little impact on the environment. Wildlife-based remedies, particularly those with pangolins, are the major exception. Through BRI, TCM remedies are reaching a wider global audience than ever before, while simultaneously becoming more prolific in mainland China.

President Xi has long been a public figure firmly in support of TCM practices and is actively promoting TCM as a prominent component of China's global identity. According to Yanzhong Huang, senior fellow at the Council on Foreign Relations, President Xi and fellow TCM supporters in the CPC have created "a discourse that makes support of TCM a patriotic duty in China."[154] Beijing's city government has taken an additional step to codify this patriotic duty through the draft regulation in June 2020 that would "[ban] people from denigrating or defaming Traditional Chinese medicine," which could carry additional criminal punishment if passed.[155] Although this action was met with fierce criticism during its public comment period, it signals the intention of the Chinese government to continue to promote TCM as part of Chinese civic duty and identity.

### *TCM's Global Recognition by the World Health Organization*

While China is promoting TCM abroad as part of the Belt and Road, China is also making progress in expanding TCM through advocacy with the World Health Organization (WHO). At WHO's 72nd World Health Assembly in Geneva in May 2019, the WHO included TCM in its International Classification of Diseases (ICD) for the first time.[156] The ICD acts as "the international standard for reporting diseases and health conditions [and] is the diagnostic

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[154] Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

[155] Zhou, Viola. "Beijing City Plans to Punish People for 'Defaming' Traditional Chinese Medicine." *South ChinaMorning Post*, June 4, 2020. https://www.scmp.com/news/china/society/article/3087545/beijing-city-plans-punish-people-defaming-traditional-chinese.

[156] World Health Organization. "ICD-11 for Mortality and Morbidity." World Health Organization. June 18, 2018. https://www.who.int/classifications/icd/en/.

classification standard for all clinical and research purposes" in the WHO's 194 Member States.[157] This listing was inclusive of 400 TCM diagnoses and dictates the healthcare agenda of over 100 nations.[158]

Fierce criticism of the WHO decision stemmed from two communities: wildlife conservationist organizations and members of the medical and epistemic community. Due to the prevalent role of wildlife in TCM, conservationists see the decision by the WHO as one that will open a door to further exploitation of wildlife and their habitats. The medical and epistemic community sees TCM as unscientific, in reference to the over 230,000 annual documented negative side effects to use of wildlife TCM products.[159] In response to these critiques, the WHO stated that its TCM strategy simply "provides guidance to Member States and other stakeholders for regulation and integration of safe and quality assured traditional and complementary medicine products, practices, and practitioners."[160] Outside observers are also casting a suspicious eye toward the WHO's decision and its role in boosting China's international standing through public health leadership. China's April pledge of an additional USD$30 million in support to the WHO to combat COVID-19 was met with skepticism.[161] This action was seen as an attempt to boost China's global image after the PRC initially hindered the pandemic response and the WHO was slow to act. The combination of inadequacy in coordinating a global response to the COVID-19 pandemic and a perceived shift toward China, particularly under the tenure of Margaret Chan from 2006-2017, make the decision to include TCM on the International Classification of Diseases a curious one.

This listing is expected to increase demand for TCM globally as it is integrated into national health programs around the world, at low cost and therefore desirable to insurance companies, with its associated effects being highly detrimental to wildlife – especially pangolins.

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157 World Health Organization. "ICD-11 for Mortality and Morbidity." World Health Organization. June 18, 2018. https://www.who.int/classifications/icd/en/.

158 World Health Organization. "World Health Assembly." World Health Organization. n.d. https://www.who.int/about/governance/world-health-assembly.

159 Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

160 Ibid.

161 Perper, Rosie. "China is Injecting Millions into WHO as the US Cuts Funds. Experts Say Beijing is Trying to Boost its Influence Over the Agency and Its 'Deeply Compromised' Chief." *Business Insider*, April 24, 2020. https://www.businessinsider.com/china-who-multimillion-dollar-contribution-political-power-move-2020-4.

***Pushback Against Using Wildlife in TCM***

Amidst the pro-TCM environment cultivated by President Xi and the CPC, and increasing international acceptance and demand for TCM products worldwide through BRI and elsewhere, domestic forces in China may be pushing against this eventuality.

Beginning in January 2020, China announced that its national insurance would no longer cover TCM containing pangolin products.[162] This may have the dual benefit of increasing costs of pharmaceutical products using pangolins, while also deterring individuals who see this decision by the Chinese government as instructive for their purchasing decisions.

In several cases, there have also been examples of TCM practitioners working to distance themselves from use of wildlife products in TCM, because of its role in facilitating wildlife trafficking.[163]

Most significant is China's decision in early June 2020 to remove pangolins from the *Chinese Pharmacopoeia* as a legitimate and government-endorsed TCM ingredient, while bolstering its protection to a Class I species under the Wildlife Protection Law. Protection remains incomplete, however, as a result of the Wildlife Protection Law's loophole permitting pangolins from government stockpiles to be utilized by pharmaceutical companies in patent medicines.[164] The decision to remove pangolins from the pharmacopoeia was not without precedent. In the 1970s and 1980s, species of tiger and rhinoceros that were heavily impacted by TCM demand were placed on CITES Appendix I, while tiger bone, rhino horn, and other derivatives from these species were progressively removed from the *Chinese Pharmacopoeia* from 1963-2010.[165]

Unfortunately for the pangolin, and many other species of imperiled wildlife, removal from the pharmacopoeia and CITES listing does not equate with a permanent cessation of use in TCM. Rhinoceros are still poached heavily for their horns, as are tigers for their myriad parts utilized in TCM. A combination of tradition, misinformation, and minimal enforcement create an

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162 Hornor, Faith, and Amanda Shaver. "Beyond the Scales: Pangolin Meat Trade in Asia." *C4ADS Blog* (blog), February 26, 2020. https://c4ads.org/blogposts/pangolin-trade-in-asia.

163 Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

164 Alberts, Elizabeth. "Did China Really Ban the Pangolin Trade? Not Quite, Investigators Say." *Mongabay*, June 20, 2020. https://news.mongabay.com/2020/06/did-china-really-ban-the-pangolin-trade-not-quite-investigators-say/.

165 Cyranoski, David. "The Big Push for Chinese Medicine." *Nature* 561 (September 27, 2018): 448–50. https://media.nature.com/original/magazine-assets/d41586-018-06782-7/d41586-018-06782-7.pdf.

environment where species continue to be used in TCM long after they are removed from the official listing. TCM use can be responsive to public pressure, but it must be maintained over the long-term in order to achieve conservation successes for these species.

## PART THREE: CONCLUSION

### Discussion

Increasing demand for TCM products in mainland China, combined with the CPC's active promotion of TCM along BRI, suggest that BRI has and will continue to be utilized as a tool to increase demand for TCM products globally. Simultaneously, strong demand for pangolins' scales and meat in mainland China is placing extreme pressure on all eight species of pangolin to meet demand. For thousands of years, until early July 2020, pangolins were listed in the various iterations of the *Chinese Pharmacopoeia* as a component of multiple TCM remedies. In its most basic form, if China is promoting TCM abroad in BRI countries and not fully protecting pangolins as a TCM ingredient, then BRI will facilitate increased demand for pangolins.

Domestically, China has protected pangolins under the Wildlife Protection Law by classifying them as Class I species and removed them from the *Chinese Pharmacopoeia* as a raw ingredient used in TCM. These actions were incomplete protection for pangolins, with the Wildlife Protection Law loophole allowing pangolins to be sourced from government stockpiles – which are unlikely to meet demand and help to launder illegally-sourced pangolins – and with the pharmacopoeia retaining pangolins as key ingredients for several patent medicines produced and exported by Chinese pharmaceutical companies. As pharmaceutical companies continue to export globally, including to BRI partner countries, and as TCM centers are built abroad along the BRI, with these legal shortcomings in pangolin protection it is likely that BRI will continue to act as a form of increasing demand for TCM and pangolin products.

If China is serious about protecting pangolins, both domestically and in cooperation with BRI member nations, the Wildlife Protection Law and pharmacopoeia loopholes will need to be addressed. Also, through President Xi and the CPC's promotion of TCM through BRI, more explicit discussion of reducing the use of pangolin in TCM is needed, particularly in instances of the Chinese medical industry (through pharmaceutical exports and TCM centers) offering TCM solutions in countries where domestic pangolin protections are limited. These efforts, in

coordination with demand reduction campaigns and more holistic domestic protections in China and BRI countries, can provide a lifeline for pangolins.

If left in its current state, however, China's promotion of TCM and incomplete protection for pangolins in TCM along the BRI will likely increase demand for pangolins, with devastating consequence for all eight species. As one of the largest demand markets with a growing international footprint, China has the ability to decide whether their use of pangolin products will become sustainable or whether demand for TCM will drive pangolins to extinction.

**The Role of COVID-19 on Pangolin Demand**

The specific consequence in China of pangolins being implicated as the intermediate host of SARS-CoV-2 between bats and humans has not yet been analyzed and made publicly available in the form of a peer-reviewed study. However, in order to determine the role COVID-19 on pangolin demand in China, trends from the 2002-2003 SARS epidemic and a study of Southeast Asian responses to COVID-19 and wildlife consumption can be informative.

After the emergence of SARS-CoV and its subsequent epidemic, the scientific community identified bats as the initial host, who transferred the virus to masked palm civets (*Paguma larvata*), a type of wild cat.[166] The civet, present in a live animal market, then transmitted the virus to humans.[167] Civet consumption was banned in China as a result of its implied role as the intermediate host and demand decreased after the emergence of the virus. However, demand for civet cats has risen to higher levels today as a result of their use in the production of kopi luwak, coffee brewed from partially digested coffee beans consumed by civets.

If the last SARS epidemic can be used as a model, pangolin demand may decrease in the wake of COVID-19 yet increase when the threat of coronavirus has passed, as has been the pattern with SARS and MERS. The trend of an initial decrease in demand after the emergence of a zoonotic disease is reflected by a March 2020 study sponsored by World Wildlife Fund and conducted by GlobeScan. Researchers interviewed 5,000 respondents across five wildlife markets, located in Hong Kong SAR, Japan, Myanmar, Thailand, and Vietnam, to understand the role of

[166] PLOS. "Bat Cave Study Sheds New Light on Origin of SARS Virus: Newly Discovered SARS Strains in Bats Hold Genetic Clues to the Evolution of a Human Pandemic Strain." *ScienceDaily*, 30 November 2017. https://www.sciencedaily.com/releases/2017/11/171130141222.htm.

[167] Wang, L.F. and B.T. Eaton. "Bats, Civets, and the Emergence of SARS." *PubMed*, 2007. https://pubmed.ncbi.nlm.nih.gov/17848070/.

the COVID-19 pandemic on consumer behavior in wildlife markets. As COVID-19 is alleged to have originated through an illegal pangolin sale in a wildlife market, this study aimed to determine what impact, if any, the wildlife origin of the pandemic may have on their decision making. In the study, 84% of individuals said they were unlikely or very unlikely to buy wildlife products in open wildlife markets in the future, with 91% stating that they were unlikely or very unlikely to buy wildlife products in illegal and unregulated markets selling wild animals in the future.[168] The main limitations for the purpose of this report is that the results were geared toward consumption in wildlife markets, rather than use of pharmaceuticals or in restaurants, and did not include mainland China. Hong Kong and Vietnam are prominent consumers of wildlife, including pangolin, so although China is not included in this study it may be instructive of how consumers in these areas are thinking about purchasing wildlife in markets.

Although the initial demand decrease was observed in the WWF/GlobeScan survey, COVID-19 is inherently different due to its global reach and high number of cases. By July 2003, 29 countries reported 8,098 probable SARS cases to the WHO.[169] As of 11:48 am CEST on July 7, 2020, the WHO had received reports of 13,575,158 confirmed cases of COVID-19, accounting for almost every country on the planet.[170] As a global pandemic, COVID-19 may become more influential than SARS in decreasing demand for pangolins. In order for temporary demand reduction to be permanent, consumers will need to make the intellectual connection between pangolins and COVID-19. In the coming months, countries where demand for pangolins is traditionally high and that were successful in mitigating the spread of COVID-19, will be important to observe in order to understand the role of COVID-19 in overall pangolin demand.

Another aspect of pangolin demand amid COVID-19 is the Chinese government's use of TCM products and practices to treat the pandemic – both domestically and abroad. Despite no scientific evidence of TCM's efficacy on a large scale, Chinese state media reported in March 2020 that over 74,000 COVID-19 patients in the country had been treated with TCM.[171] As part

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[168] GlobeScan and World Wildlife Fund. "Opinion Survey on COVID-19 and Wildlife Trade in 5 Asian Markets." April 6, 2020. https://www.worldwildlife.org/publications/opinion-survey-on-covid-19-and-wildlife-trade-in-five-asian-markets.

[169] Centers for Disease Control and Prevention. "Severe Acute Respiratory Syndrome (SARS): Surveillance and Reporting." January 8, 2004. https://www.cdc.gov/sars/surveillance/index.html.

[170] World Health Organization. "WHO Coronavirus Disease (COVID-19) Dashboard. Last updated July 17, 2020. https://covid19.who.int/?gclid=CjwKCAjwmMX4BRAAEiwA-zM4Juxk9DETigwYF1_bS_CPwrN3qPV2pnkHscTWleHSjPcAWrA-hs1anxoCmj8QAvD_BwE.

[171] Zhou, Viola. "Beijing City Plans to Punish People for 'Defaming' Traditional Chinese

of the PRC's international COVID-19 aid efforts, TCM professionals and products have been dispatched to countries such as Afghanistan and Pakistan, where China saw a window to provide scientifically dubious TCM treatments in countries with otherwise insufficient public health infrastructure.[172]

**Data Gaps and Areas for Future Research**

Unfortunately, attempting to determine the impact of BRI on demand for African pangolins is hindered by data gaps in several key areas. Continued research support would allow conservationists to better understand the exact nature of demand in China and its BRI partner countries in order to pinpoint where intervention and demand reduction strategies would be most influential.

*Studies measuring pangolin demand are limited.* There are few comprehensive studies interpreting pangolin seizure data and limited data measuring consumer demand for pangolins. This is a significant hindrance to understanding the level of demand for pangolins in China and within BRI partner countries. Also, the breakdown of demand for pangolin meat in restaurants compared to TCM is unclear, as it is extrapolated primarily from seizure data on trafficked whole pangolins or pangolin meat to measure restaurant demand and pangolin scales to measure TCM demand. Overall, information on pangolin demand comes from independent journalism and anecdotal evidence, almost exclusively with very small sample sizes which limit understanding of larger demand trends. Future research on demand for pangolins is needed.

*Publicly available information on TCM exports is also limited.* For this study, the best-case scenario would have been the ability to measure pangolin-based TCM exports to BRI countries, in order to understand the exact level of TCM including pangolins, which essentially remains legal due to a TCM loophole for China-based pharmaceutical companies. Knowing the exact volume of TCM exports containing pangolin derivatives would allow researchers to map demand trends over time.

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Medicine." *South China Morning Post*, June 4, 2020. https://www.scmp.com/news/china/society/article/3087545/beijing-city-plans-punish-people-defaming-traditional-chinese.

[172] Felbab-Brown, Vanda. "Fentanyl and Geopolitics: Controlling Opioid Supply from China." The Brookings Institution, July 22, 2020. https://www.brookings.edu/research/fentanyl-and-geopolitics-controlling-opioid-supply-from-china/.

*The level of demand for pangolins from different outlets is not well-understood.* Pangolin scales are utilized for TCM, but the share of the market between legal and illegal TCM sellers, as well as online purchase compared to shops or markets is also unknown.[173]

*The exact impact of COVID-19 in pangolin demand in China is unknown.* The WWF/GlobeScan study of Southeast Asian countries is informative, as is Chinese citizens' previous interaction with civets after the SARS epidemic. However, no study has measured demand for pangolins in China since the outbreak of COVID-19 in Wuhan. In response to the assertion that SARS-CoV-2 was transmitted from pangolins to humans in a wildlife market in Wuhan, the Chinese government closed wildlife markets, some of which act as an outlet for trafficked wildlife. Studies on consumer demand, including preferences for buying in a market versus online, would be helpful to understand the influence of this pandemic on consumption in China.

[173] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

# Chapter Three: The Pangolin Trafficking Supply Chain

Pangolin poaching and trafficking remains the greatest threat to the survival of all eight pangolin species. Historically, trafficking of Asian pangolins dominated the pangolin trafficking landscape. In 2013, Africa overtook Asia as the primary source region for pangolins, per seizure data.[174] Potential reasons for this shift include an overexploitation of Asian pangolins and the development of economic ties between East Asia and African nations where trafficked pangolins originated.[175] With the establishment of BRI also in 2013, it is an important research question to determine if BRI had any impact on trafficking of African pangolins, which is the purpose of this chapter.

In Part One of this chapter, I provide pertinent information on the scale of the pangolin trafficking problem by describing pangolin seizure data and identifying national actors as key source countries, transit countries, or destination countries, following the definitional structure provided by the TRAFFIC/USAID *In Plane Sight* report.[176] In Part Two, I analyze the impact of BRI on African pangolin trafficking with two research questions: 1) How has BRI influenced trafficking of African pangolins? and 2) How might BRI influence African pangolin trafficking in the future? Lastly, in Part Three, I discuss the key findings of this analysis, review data gaps and areas for further research, and interpret the impact of COVID-19 on wildlife trafficking, including pangolins.

## PART ONE: THE SCALE OF THE PROBLEM

### Pangolin Trafficking at a Glance

The primary indicator the conservation and international law enforcement communities use to understand the pressure wildlife crime places on wildlife populations is seizure data. Through

[174] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[175] Challender, Daniel W.S., Baillie, Jonathan E. M., Waterman, Carly, Pietersen, Darren W., Nash, Helen, Leanne Wicker, Keri Parker, et al. "On Scaling Up Pangolin Conservation." *TRAFFIC Bulletin* 28, no. 1 (2016). https://www.pangolinsg.org/wp-content/uploads/sites/4/2018/06/Challender-et-al_2016_On-Scaling-Up-Pangolin-Conservation.pdf.

[176] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

analyzing seizure data, we know that pangolins constitute approximately 20% of the illegal wildlife trade[177] and that today pangolins are trafficked at a rate ten times higher than observed in 2014.[178] After an April 2019 seizure in Singapore, the total value of pangolin products seized by law enforcement crossed the USD$100 million mark.[179] Although pangolin trafficking reached this grisly benchmark, high-profile large seizures have continued at a staggering pace. Seized pangolin shipments are believed to only account for 10% of the true scale of the pangolin trafficking industry, so the outlook for pangolins is likely far more dire than seizure data reflects thus far.[180]

## Seizure Statistics

### *Data Sources*

The seizure data presented in this report are sourced from two studies of global pangolin trafficking that, within the conservation community, are considered to be thorough reports about the state of pangolin trafficking for the time periods described in each study.

The first report, *The Global Trafficking of Pangolins: A Comprehensive Summary of Seizures and Trafficking Routes from 2010 to 2015*, was released by TRAFFIC in December of 2017.[181] TRAFFIC is a United Kingdom charity, created through a joint venture of the International Union for Conservation of Nature (IUCN) and World Wildlife Fund (WWF), that "plays a unique and leading role as a global wildlife trade specialist."[182] The report provided a detailed assessment of seized quantities of pangolins, with seizure data disaggregated by scales, meat, and whole animals, while also identifying key nations in the global pangolin trafficking

[177] Gupta, Alok. "Illegal Pangolin Scale Seizure Crosses $100 Million Mark." *CGTN*, April 11, 2019. https://news.cgtn.com/news/3d3d774e3355544f33457a6333566d54/index.html.

[178] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[179] Gupta, Alok. "Illegal Pangolin Scale Seizure Crosses $100 Million Mark." *CGTN*, April 11, 2019. https://news.cgtn.com/news/3d3d774e3355544f33457a6333566d54/index.html.

[180] Guynup, Sharon. "Pangolins On the Brink as Africa-China Trafficking Persists Unabated." *Mongabay*, May 8, 2018. https://news.mongabay.com/2018/05/pangolins-on-the-brink-as-africa-china-trafficking-persists-unabated/.

[181] Heinrich, Sarah, Talia Wittman, Joshua Ross, Chris Shepherd, Daniel Challender, and Phillip Cassey. "The Global Trafficking of Pangolins: A Comprehensive Summary of Seizures and Trafficking Routes from 2010 - 2015." Selangor, Malaysia: TRAFFIC, 2017. https://www.traffic.org/publications/reports/the-global-trafficking-of-pangolins/.

[182] TRAFFIC. "Our Mission." n.d. https://www.traffic.org/about-us/our-mission/.

supply chain. The report also pinpointed international trade routes used by transnational criminal organizations engaging in pangolin trafficking, both established and new, and provided recommendations for national governments and the conservation community. Prior to the publication of this report, no global pangolin trafficking assessment existed.

The second report, *Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales, 2016-2019*, was released by the Wildlife Justice Commission in February 2020.[183] The Wildlife Justice Commission (WJC) is a non-profit headquartered in The Hague, Netherlands, which operates "globally to disrupt and help dismantle organized transnational criminal networks trading in wildlife, timber, and fish."[184] The WJC report built upon the 2017 TRAFFIC report by analyzing pangolin seizure data and combining them with the findings of WJC's Intelligence Development Unit, resulting in "a comprehensive understanding of the key countries, smuggling routes, shipping methods, destinations, and pricings of pangolin scales."[185] The main findings of this report suggest that pangolin trafficking from 2016-2019 increased precipitously, further endangering pangolin species across the entirety of their range.

The TRAFFIC and WJC studies are the most complete seizure data reports for pangolin trafficking analysis of the last ten years. Attempting to recreate the data sets used in these studies with publicly available, and inherently less thorough data, would result in a less effective measure of pangolin trafficking than what is reported in the two selected assessments. TRAFFIC collected data on 1,270 pangolin seizure incidents reported in multiple sources, including online media outlets, CITES open data, and NGO publications, yet also submitted requests for seizure reporting from 179 CITES Management authorities and relied upon internal datasets assembled by Dan Challender and TRAFFIC, as well as sourcing from multiple countries' law enforcement systems. WJC combined open source media reporting of 52 pangolin scale seizures from open source media reporting with independent assessment by the WJC Intelligence Division to arrive at their assessment.

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[183] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[184] Wildlife Justice Commission. "FAQs." n.d. https://wildlifejustice.org/faq/.

[185] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

In reviewing the quantities of seized pangolin products presented below, it is important to note two caveats which prevent the direct comparison of each report's findings: 1) The TRAFFIC report details seizures of multiple pangolin derivatives, namely scales, body parts, and whole pangolins, while the WJC report describes scale seizures only; and 2) Quantities of scales seized are not fully comprehensive and cannot be compared equally. Both reports describe large quantity seizures yet provide different criteria for what can be considered a large quantity scale seizure. In the TRAFFIC report, large quantity seizures of pangolin scales are those greater than or equal to 1,000 kg (also reported as 1 metric ton), while WJC defines large scale seizures as those above 500 kg, leading to potential discrepancies between the WJC and TRAFFIC report of seizures between 500-999 kg. Although small-scale seizures occur, where individuals are caught by law enforcement attempting to smuggle pangolin products across borders in luggage or other parcels, both reports focus on industrial, large-scale trafficking, which is the primary data point for this chapter.

***Seizure Data Limitations***

In order to measure the scope of pangolin trafficking globally, seizure data are the best metric we have, despite many limitations. Seizure data are mixed indicators, reliant upon different countries' varied levels of law enforcement capacity, reporting ability and willingness to share seizure data, and prioritization of wildlife crime enforcement. This greatly complicates global seizure data analyses.

Wholesale identification of pangolin species involved in the global trade, or even in individual seizures, is incredibly difficult. As pangolin products move up the supply chain, they are consolidated with other species. If a shipment is primarily composed of scales, identifying scales at the species level is a challenge and as a result, much seizure reporting is done at the genus or family level. In countries like the U.S. where only one of the eight pangolin species are federally protected, this makes enforcement even more challenging.

Seizures are reflective of only the unsuccessful smuggling attempts. They also can be misleading, with discrepancies in transit/destination countries on bills of lading compared to the

true route, or can reflect successful enforcement action in the country that conducted the seizure rather than indicate a problem.[186]

For organizations like TRAFFIC and WJC who work to compile comprehensive seizure reports such as these, their work is highly complex because seizures are not reported in uniform weights. Although some seizure incidents are described in terms of kilograms, tons, or metric tonnes, there are also large amounts of more qualitative reports like "bags of scales" or whole specimens not identified at the species level, and therefore without a corresponding weight.

Lastly, since many pangolin shipments are not identified at the species level and ranges of multiple species overlap, particularly in Africa, it is nearly impossible to make any determination about the number of individual pangolins accounted for in seizure data. Pangolin species vary in size from 3.5 pounds to 75 pounds, making assessment of individuals based only on mixed scales highly difficult.[187] Not only is the conservation community operating at a knowledge deficit for population studies of wild pangolins, but inability to accurately characterize species of seized pangolin contraband is another complicating factor in assessing the status of pangolin trafficking.

Despite all of those limitations, seizure data are accepted as the best proxy indicator for measuring wildlife exploitation that is available today.

### *Volume of the Trade*

Between 2010-2015, TRAFFIC reported the seizure of 55.3 tons of pangolin scales and 5,613 individual scales (Table 2). The prominent roles of Indonesia, Vietnam, Malaysia, and Lao PDR reflect Southeast Asia's role as "the epicenter of the global wildlife trade," where 35 million CITES-listed plants and animals were traded from 1998-2007.[188]

All of the countries listed on Table 2 are pangolin range states, with the exception of Germany and the United States, illustrating these two Western countries' positions as demand and transit countries in the global pangolin trade. The United States was a destination for pangolin

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[186] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

[187] Thebault, Reis. "The World's Most-Trafficked Mammal May Also Be Its Most Obscure -- and Agents Just Found 14 Tons." *The Washington Post*, April 10, 2019. https://www.washingtonpost.com/science/2019/04/10/pangolin-scales-trafficking-bust-singapore/.

[188] Krishnasamy, Kanitha, and Monica Zavagli. "Southeast Asia: At the Heart of Wildlife Trade." Petaling Jaya, Malaysia: TRAFFIC, 2020. https://www.traffic.org/publications/reports/renewed-game-plan-needed-to-tackle-southeast-asias-massive-wildlife-trafficking-problem/.

body parts,[189] which is consistent with the belief that the U.S. is the second largest consumer market for wildlife products, behind China.[190] European countries, particularly Germany, France, and Belgium, acted as a transit hub for African pangolins shipped to Asia.[191]

In terms of African pangolins, from 2010-2015, Nigeria was the only African nation implicated as one of the top countries or territories involved in the pangolin trade.

For all shipments recorded, 55% of the largest shipments seized originated in African countries, primarily in Sierra Leone, Nigeria, Cameroon, and Uganda, reflecting the growing pattern of large quantity pangolin shipments originating on the African continent.[192]

Overall, the proportion of large shipments from 2010-2015 increased over time, which the authors of the TRAFFIC report mentioned but is difficult to independently interpret based on individual countries without direct access to the original data.

**Table 2. Total weight of trafficked pangolin linked to countries and territories, independent of role in supply chain, 2010-2015.** Adapted from TRAFFIC Table 2, "*Top 10 countries or territories ranked by the total number of international trafficking incidents of pangolins (Manis spp.) in which they were involved, regardless of their role in the trade route.*"

| Country/Territory | Scales (kg) | Body Parts (kg) | Whole (kg) | Total (kg) |
|---|---|---|---|---|
| Indonesia | 4,103 | - | 45,140 | 49,243 |
| Vietnam | 7,487 | 2,119 | 19,125 | 28,731 |
| China | 16,291 | 2,290 | 6,408 | 24,989 |
| Malaysia | 10,534 | - | 5,061 | 15,595 |
| Hong Kong SAR | 7,148 | - | 600 | 7,748 |
| Nigeria | 6,373 | 26 | 10 | 6,409 |
| Lao PDR | 1,914 | - | 61 | 1,975 |
| Thailand | 1,222 | - | 61 | 1,283 |
| Germany | 667 | 26 | - | 693 |
| United States | 1 | 5 | - | 6 |

[189] Heinrich, Sarah, Talia Wittman, Joshua Ross, Chris Shepherd, Daniel Challender, and Phillip Cassey. "The Global Trafficking of Pangolins: A Comprehensive Summary of Seizures and Trafficking Routes from 2010 - 2015." Selangor, Malaysia: TRAFFIC, 2017. https://www.traffic.org/publications/reports/the-global-trafficking-of-pangolins/.

[190] Felbab-Brown, Vanda, and Bradley S. Porter. "The Global Poaching Vortex." The Brookings Institution, March 2, 2016. https://www.brookings.edu/blog/order-from-chaos/2016/03/02/the-global-poaching-vortex/.

[191] Heinrich, Sarah, Talia Wittman, Joshua Ross, Chris Shepherd, Daniel Challender, and Phillip Cassey. "The Global Trafficking of Pangolins: A Comprehensive Summary of Seizures and Trafficking Routes from 2010 - 2015." Selangor, Malaysia: TRAFFIC, 2017. https://www.traffic.org/publications/reports/the-global-trafficking-of-pangolins/.

[192] Ibid.

From 2016-2019, WJC reported the seizure of 206.4 tons of pangolin scales intercepted in 52 seizures (Table 3). As a reminder, the larger sample size of the WJC report, compared to that of TRAFFIC, may account for the drastic observed increase from 55.3 tons of scales to 206.4 tons of scales. However, the data in the WJC report reflect a shift toward fewer, larger shipments of scales trafficked from Africa into Southeast and East Asia. The overall average size of shipments increased by 138% from 2018-2019.[193]

In their analysis, WJC found that six of the 27 countries and territories implicated in the global pangolin trafficking supply chain were responsible for 94% of all seizures: Nigeria, Vietnam, China, Singapore, Hong Kong SAR, and the Democratic Republic of Congo. Each of these countries and territories, with the exception of South Korea, is home to at least one species of pangolin. Nigeria, Vietnam, and China were the three countries with the highest attributed weight of trafficked pangolins independent of their role in the supply chain, with Nigeria increasing by five times from 2016-2019. Vietnam and Singapore experienced large increases in linked weight between 2018 and 2019, while trends in China and Hong Kong were variable from year to year.

**Table 3. Total weight of trafficked pangolin linked to countries and territories, independent of role in supply chain, 2016-2019.** Adapted from Wildlife Justice Commission Table 3, "*Countries/territories and highest weight linked regardless of the role, per year (2016-2019).*"

| Country/Territory | 2016 (kg) | 2017 (kg) | 2018 (kg) | 2019 (kg) | Total (kg) |
|---|---|---|---|---|---|
| Nigeria | 10,400 | 13,250 | 36,557 | 52,923 | 113,130 |
| Vietnam | - | - | 17,411 | 57,873 | 75,284 |
| China | 4,700 | 31,859 | 7,260 | 10,650 | 54,469 |
| Singapore | - | - | 3,800 | 41,513 | 45,313 |
| Hong Kong SAR | 13,400 | 7,200 | 12,330 | 8,300 | 41,230 |
| Democratic Republic of Congo | 2,900 | 6,000 | 5,600 | 17,100 | 31,600 |
| Cameroon | 4,670 | 6,450 | 2,518 | 3,100 | 16,738 |
| Malaysia | 670 | 13,059 | - | - | 13,729 |
| South Korea | - | - | - | 10,650 | 10,650 |
| Lao PDR | 6,300 | - | - | - | 6,300 |

[193] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

From 2010-2015, China, Malaysia, and Vietnam were the countries with the largest associated weight of pangolin scales, regardless of their role. In 2016-2019, Nigeria overtook these three countries and the volume of seized scales associated with Nigeria escalated quickly.

**Pangolin Trafficking in Source and Origin Countries**

Source countries can be defined as "the origin of trafficked wildlife or wildlife products" while origin countries are "the origin of a trafficking instance."[194] One is a measure of the wildlife and the other of the trafficking action.

Per the 2017 TRAFFIC report, from 2010-2015, African countries were primarily origin countries, with Nigeria, Cameroon, Guinea, Liberia, Equatorial Guinea, Côte d'Ivoire, Kenya, Ethiopia, Mozambique, Uganda, and Togo all implicated in five or more pangolin trafficking events during this period and 55% of all large quantity shipments originated in Africa. In alignment with the continuing shift from Asian to African origin countries, from 2016-2019 only one of the twelve countries identified as a prominent origin country, Indonesia, was geographically outside of Africa (Table 4).

**Table 4. Pangolins seized by weight in origin countries.** Adapted from Wildlife Justice Commission Table 5 "*Countries of origin and total attributed weight (2016-2019).*"

| Country/Territory | 2016 (kg) | 2017 (kg) | 2018 (kg) | 2019 (kg) | Total (kg) |
|---|---|---|---|---|---|
| Nigeria | 10,400 | 12,200 | 21,805 | 52,923 | 97,328 |
| Democratic Republic of the Congo | 2,900 | 6,000 | 5,600 | 17,100 | 31,600 |
| Uganda | - | 6,000 | - | - | 6,000 |
| Cameroon | 4,670 | - | - | - | 4,670 |
| Liberia | - | 3,000 | - | - | 3,000 |
| Burkina Faso | - | 3,000 | - | - | 3,000 |
| Côte d'Ivoire | - | 3,000 | - | - | 3,000 |
| Congo | 2,900 | - | - | - | 2,900 |
| Ghana | 2,100 | - | - | - | 2,100 |
| Central African Republic | - | - | 718 | - | 718 |
| Indonesia | - | - | 630 | - | 630 |
| Guinea | 500 | - | - | - | 500 |

[194] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

As a measure of total weight, Nigeria and Democratic Republic of the Congo were connected with 82.94% of pangolin scales seized from 2016-2019 and were identified by WJC as two "major players" in pangolin trafficking today. It is important to recall that this does not precisely mean that 82.94% of seized pangolin scales were from pangolins endemic to Nigeria and DRC, but that these countries were origin countries – the start of the pangolin trafficking supply chain. Although both Nigeria and DRC are range states, because of incomplete documentation, difficulty identifying seized pangolins at the species level, and the possibility that traffickers moved pangolins into these countries where they were consolidated and trafficked from there, we cannot assert definitively Nigeria and DRC are source countries, only countries of origin. This does not invalidate the necessity to address Nigeria and DRC as the start of the pangolin trafficking supply chain.

## Pangolin Trafficking Between Origin and Destination Locations

### *Prominent Transit Countries and Smuggling Routes*

Transit countries are defined as "the intended transit point(s) for a trafficking instance on the way from its origin location to its destination location."[195] From 2010-2015, TRAFFIC identified 159 unique international routes, with an average of 27 new routes emerging each year. This information suggests that pangolin trafficking is a highly mobile enterprise with transnational crime organizations capable of adjusting trafficking routes as needed. In the 2016-2019 data, Nigeria, Cameroon, and DRC were implicated as key pangolin smuggling routes (Table 5). Nigeria, Vietnam, and Hong Kong SAR are growing in prominence with Singapore appearing to be an increasingly important transit hub between them.[196]

[195] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

[196] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

**Table 5. Prominent pangolin trafficking routes.** Adapted from Wildlife Justice Commission Table 9 "*Smuggling routes linked to highest volume of scales (2016-2019)*."

| 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|
| Nigeria – Hong Kong SAR: 7,300 kg | Malaysia – China: 13,059 kg | Nigeria – Hong Kong SAR: 11,700 kg | Nigeria – (Singapore – Vietnam: 33,973 kg |
| Cameroon – Hong Kong SAR: 4,000 kg | Nigeria – Hong Kong SAR: 7,200 kg | Nigeria – Vietnam: 10,823 kg | DRC – (Singapore) – Vietnam: 15,900 kg |
| Nigeria – China: 3,100 kg | Nigeria – Malaysia – China: 5,000 kg | DRC – Singapore – Vietnam: 3,800 kg | Nigeria – Hong Kong SAR: 8,300 kg |

Hong Kong SAR is an important player in the global wildlife trade as a whole and is active in pangolin trafficking. From 2014-2018, 53 tons of pangolin scales were seized on their way into China from Hong Kong and the open economic nature of Hong Kong in previous years has made it a formidable challenge to curbing wildlife trafficking in the region.[197] According to Tse Chin-wan, Hong Kong's undersecretary for the environment, "we have to accept the reality that Hong Kong is a free port, and offers a lot of opportunities for this kind of activity to happen. Every day, we have tens of thousands of cargoes going in and going out of the city."[198]

Africa accounts for a smaller portion of the global seizure weight, with Asian nations Singapore and South Korea the most prominent transit countries (Table 6). Singapore was associated with 53% of seized weight in its role as a transit country. Uganda, Cameroon, and Congo were the top three implicated transit countries. Notably, Nigeria, Cameroon, and Uganda were among both the top origin and transit countries.

[197] Zhang, Karen. "New Pangolin Laws Bite as Mainland Chinese Man Sentenced to 20 Months for Trafficking 48kg of Scales in Landmark Hong Kong Endangered Species Case." *South China Morning Post*, May 7, 2019. https://www.scmp.com/news/hong-kong/law-and-crime/article/3009094/new-pangolin-laws-bite-mainland-chinese-man-sentenced.

[198] Southerland, Dan. "Record Pangolin Seizures in Asia Highlight Risk to Obscure Creature." *Radio Free Asia*, April 19, 2019. https://www.rfa.org/english/commentaries/pangolin-trafficking-04192019151944.html.

**Table 6. Top transit countries.** Adapted from Wildlife Justice Commission Table 7 "*Transit countries and total attributed weight (2016-2019)*."

| Country/Territory | 2016 (kg) | 2017 (kg) | 2018 (kg) | 2019 (kg) | Total (kg) |
|---|---|---|---|---|---|
| Singapore | - | - | 3,800 | 41,513 | 45,313 |
| South Korea | - | - | - | 10,650 | 10,650 |
| Uganda | - | 6,000 | - | - | 6,000 |
| Thailand | 5,800 | - | - | - | 5,800 |
| Malaysia | - | 5,000 | - | - | 5,000 |
| Turkey | 2,900 | - | - | 1,200 | 4,100 |
| Vietnam | - | - | 3,300 | - | 3,300 |
| Cameroon | - | - | 2,518 | - | 2,518 |
| Republic of Congo | - | - | 1,800 | - | 1,800 |
| Nigeria | - | - | 718 | - | 718 |
| Kenya | 500 | - | - | - | 500 |

### *Preferred Methods of Trafficking*

Nigeria, Uganda, and DRC are considered logistical hubs for a wide range of trafficked wildlife species.[199] It is not uncommon for multiple species of wildlife to be smuggled together, particularly ivory, rhino horn, and pangolin, and transnational crime organizations rarely specialize in one species. In 2017-2018, the joint smuggling of ivory and pangolin scales tripled in volume, with scales comprising a greater portion of the shipment than ivory in many cases and illustrating an increased emphasis by these organizations to traffic pangolins.[200]

Pangolins, similar to other wildlife species, are trafficked along with other non-wildlife commodities, which are often legal and provide cover for illegal activity. The most common of these commodities are plastic waste, beans, nuts, seeds, frozen meat, ginger, and timber – which in itself represents a thriving illegal trade and environmental crisis.[201] In these mixed shipments, pangolins have also been seized while trafficked alongside ivory, rhino horn, bear paws, hornbill beaks, hippopotamus teeth (which acts as a substitute for elephant ivory), insects, big cats and their parts, reptiles, and various types of bushmeat.[202]

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[199] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[200] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales. Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[201] Ibid.

[202] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

During the 2010-2015 study period, pangolin trafficking was primarily by air. Traffickers on planes have used multiple methods, such as using missing, incomplete or fraudulent documentation, declaring pangolins as fish, wigs, feathers, etc., and hiding pangolins within meat, fish, fruit, or vegetables.[203] Although this was the primary method of trafficking, air seizures began to decline in 2016 (Table 7). Trafficking by sea became the main method of smuggling pangolin scales from 2016-2019, partly due to the drastic increase in shipment size over time. Pangolin scales are also moved by land, though appear less frequently in the seizure data than trafficking by sea or air.

**Table 7. Primary trafficking methods.** Adapted from Wildlife Justice Commission Table 11 "*Mode of Transport recorded for pangolin scales shipments (2016-2019)*."

| Transport Mode | 2016 | 2017 | 2018 | 2019 | Total |
|---|---|---|---|---|---|
| Sea | 5 | 5 | 8 | 10 | 28 |
| Air | 6 | - | 2 | 1 | 10 |
| Premises | - | 1 | 6 | - | 6 |
| Land vehicle | - | 2 | 1 | 2 | 5 |
| Unknown | - | 1 | 2 | - | 3 |
| **Total** | 11 | 9 | 19 | 13 | 52 |

**Trafficking to Destination Countries**

Destination countries are defined as the "intended destination of a trafficking instance."[204] From 2007-2018, approximately 71% of pangolin seizures were destined for China, with 19% destined for Vietnam. China was the primary endpoint for pangolin trafficking activity until 2018 when it was surpassed by Vietnam, which was associated with 80% of large quantity pangolin seizures in 2019 (Table 8).

[203] Utermohlen, Mary, and Patrick Baine. "In Plane Sight: Wildlife Trafficking in the Air Transport Sector." ROUTES, 2018. https://www.traffic.org/publications/reports/in-plane-sight/.

[204] Ibid.

**Table 8. Primary destination countries.** Adapted from Wildlife Justice Commission Table 8 "*Countries of destination and total attributed weight (2016-2019)*."

| Country/Territory | 2016 (kg) | 2017 (kg) | 2018 (kg) | 2019 (kg) | Total (kg) |
|---|---|---|---|---|---|
| Vietnam | - | - | 13,331 | 49,873 | 63,204 |
| China | - | 18,458 | 14,360 | 10,650 | 43,468 |
| Lao PDR | 6,300 | - | - | - | 6,300 |
| Cambodia | - | - | 3,300 | - | 3,300 |
| Nigeria | - | 1,050 | 1,800 | - | 2,850 |
| Romania | - | - | - | 1,200 | 1,200 |
| Malaysia | 670 | - | - | - | 670 |

Although Vietnam and China are both CITES member Parties that legislatively comply with the rule for domestic implementation of international pangolin trade limitations, pangolin sale and consumption remains common in both countries.[205]

### *Vietnam*

Vietnam holds an interesting position as both a country with high demand for pangolins and also as a smuggling hub into China, similar to Hong Kong SAR.

In 2018, USAID and GlobeScan conducted a joint study assessing demand for elephant, rhino, and pangolin products in Vietnam, surveying consumers in five Vietnamese cities, including Ha Noi and Ho Chi Minh City. In the survey, respondents stated that pangolins in Vietnam are valued as common products, where scales and meat are used for traditional medicine and consumption, as gifts, typically in close familial or friendship bonds, and are readily available for purchase at traditional medicine outlets and restaurants.[206] In purchasing decisions, scales represented 37% of pangolin parts purchased by survey respondents, followed by powder, meat, and whole pangolins. In Ha Noi, scales were the most purchased item (57% of all items purchased), while in Ho Chi Minh City, powder was the most purchased pangolin derivative (42%). The authors of the report conclude that Vietnamese buyers consider pangolins to be appropriate for many basic health needs, inexpensive and easy to buy, and that consumers' beliefs in pangolins

[205] Guynup, Sharon. "Pangolins On the Brink as Africa-China Trafficking Persists Unabated." *Mongabay*, May 8, 2018. https://news.mongabay.com/2018/05/pangolins-on-the-brink-as-africa-china-trafficking-persists-unabated/.

[206] United States Agency for International Development. "Research Study on Consumer Demand for Elephant, Rhino and Pangolin Parts and Products in Vietnam." Hanoi, Vietnam, 2018. https://www.traffic.org/publications/reports/consumer-demand-for-rhino-elephant-and-pangolin-products-in-vietnam/.

effectiveness is passed down from older to younger generations and is influenced by Chinese culture.[207]

Vietnam also acts as a transit point for pangolins destined for China. In their social media analysis from 2008-2016, Cheng et al. identified Vietnam as the largest origin country (start of wildlife shipment) for pangolins later seized in China.[208] After researchers combed through local media reports on pangolin seizures made from 2011-2019, a land route from Laos, through Vietnam, and into China was identified as a commonly used avenue for pangolin trafficking.[209] Although the focus of most pangolin conservation effort is on China, as a demand country that also operates as a key node along the pangolin trafficking supply chain, Vietnam is a significant actor to address alongside China in pangolin conservation action.

### *China*

China remains a major destination for pangolins and their products. In the TRAFFIC study of pangolin shipments from 2010-2015, China was the primary destination for large quantity shipments of both pangolin scales and whole animals. In the WJC 2016-2019 study, China was the destination for 34% of pangolin scale activity. Despite its efforts to pass and implement domestic legislation to protect pangolins, China remains a prominent end destination for smuggled pangolins converted into TCM or consumed in restaurants (detailed in Chapter Two).

## PART TWO: BRI INFLUENCES ON GLOBAL PANGOLIN TRAFFICKING

### Research Questions

To evaluate the role of BRI in the existing Africa to Asia pangolin trafficking supply chain, this study asks two research questions: 1) How has BRI influenced trafficking of African pangolins? and 2) How might BRI influence African pangolin trafficking in the future?

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[207] United States Agency for International Development. "Research Study on Consumer Demand for Elephant, Rhino and Pangolin Parts and Products in Vietnam." Hanoi, Vietnam, 2018. https://www.traffic.org/publications/reports/consumer-demand-for-rhino-elephant-and-pangolin-products-in-vietnam/.

[208] Cheng, Wenda, Shuang Xing, and Timothy C. Bonebrake. "Recent Pangolin Seizures in China Reveal Priority Areas for Intervention." *Conservation Letters* 10, no. 6 (2017): 757–64. https://doi.org/10.111/conl.12339.

[209] Jiaming, Xu, Elroi Yee, and Karen Zhang. "Nigeria: Global Investigation - Pangolins: Trafficked to Extinction." *Premium Times Nigeria*, September 25, 2019. https://allafrica.com/stories/201909250322.html.

**Question 1: How has BRI Influenced Trafficking of African Pangolins?**

President Xi announced BRI to the world in 2013. In the same year, pangolin seizure data reflected the shift from poaching Asian pangolins to trafficking African pangolins into Asia.[210] Nigeria eclipses other African nations in terms of its role in the pangolin trafficking supply chain. For the purpose of this study, I review the relationship between China and Nigeria through BRI in order to determine the impact of BRI on African pangolin trafficking.

***Nigeria's Role in the Pangolin Trafficking Supply Chain***

According to the data provided by the TRAFFIC and WJC assessments, Nigeria is a major player in the international pangolin trafficking supply chain and has risen to prominence in recent years. Nigeria was the only African nation implicated as one of the top countries by weight from 2010 to 2015, connected to 11% of all seized pangolin scale shipments during that time period.[211] From 2016 to 2019, Nigeria became the top country globally, by total weight seized, and was associated with 28% of all scale shipments – China and Vietnam were associated with 18% and 13% respectively.[212]

Nigeria was also listed among the top origin, transit, and destination countries trafficking pangolins between 2016 and 2019. Nigeria was the top origin country, associated with 63% of all trafficked scales by weight, the 10th ranked transit country and 3rd African country behind Cameroon and Congo, and the 5th ranked destination country and only African nation listed.[213]

Nigeria is home to three of the four African pangolin species – the white-bellied pangolin (*P. tricuspis*), the black-bellied pangolin (*P. tetradactyla*), and the giant ground pangolin (*S. gigantea*). The ranges of these species overlap with several of Nigeria's geographic neighbors, which provide additional pangolins to source for the illegal trade.

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[210] United Nations Office on Drugs and Crime. "Wildlife Crime: Pangolin Scales." United Nations Office on Drugs and Crime, 2020. https://www.unodc.org/unodc/en/data-and-analysis/wildlife.html.

[211] Heinrich, Sarah, Talia Wittman, Joshua Ross, Chris Shepherd, Daniel Challender, and Phillip Cassey. "The Global Trafficking of Pangolins: A Comprehensive Summary of Seizures and Trafficking Routes from 2010 - 2015." Selangor, Malaysia: TRAFFIC, 2017. https://www.traffic.org/publications/reports/the-global-trafficking-of-pangolins/.

[212] Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Commission, 2020. https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019.pdf.

[213] Ibid.

Per the IUCN SSC Pangolin Specialist Group 2016 assessment, Nigeria affords full domestic protection to its three pangolin species through the Endangered Species (Control of International Trade and Traffic) Act of 1985.[214] Internationally, Nigeria was one of the first nations to ratify CITES, which entered into force on 7 January 1975.[215] In preparation for the 2016 Appendix I CITES listing of all eight pangolin species, Nigeria was cooperative with the CITES Secretariat. Nigeria was one of twenty African range states that sent in a questionnaire detailing the conservation status of their pangolin species, reporting population declines and pangolin seizures in the country.[216]

In October 2018, the CITES Secretariat issued a recommendation to suspend trade with Nigeria for an endangered species of tree (*Pterocarpus erinaceus*) due to issues with compliance and enforcement, but no other CITES-based trade restriction recommendations have been given despite Nigeria's growing role in wildlife trafficking.[217]

Despite both domestic and international protections for Nigeria's pangolins, the sheer volume of pangolins shipped from within its borders as part of the pangolin trafficking supply chain suggest that current efforts are inefficient. The UNODC warned in March 2019 that Nigeria "might risk [evolving] into a transit hub for illicit wildlife products, including pangolins, elephant tusks and other protected species."[218] Conservation enforcement is hindered by several factors, including governmental corruption, security challenges from Boko Haram in the northeast, and limited penalties for wildlife crime offenses, all of which present a bleak outlook for future conservation action to protect pangolins and other trafficked species.[219]

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[214] International Union for the Conservation of Nature SSC Pangolin Specialist Group. "The Status, Trade and Conservation of Pangolins (Manis Spp.)." Information Document for the 17th Meeting of the Conference of Parties to CITES. Johannesburg, South Africa, 2016.

[215] CITES. "Nigeria." n.d. https://cites.org/eng/cms/index.php/component/cp/country/NG.

[216] Challender, Daniel W.S. and Carly Waterman. "Implementation of CITES Decisions 17.239 b) and 17.240 on Pangolins (*Manis* spp.)." IUCN and CITES, September 2017. https://www.cites.org/sites/default/files/eng/com/sc/69/E-SC69-57-A.pdf.

[217] CITES. "Countries Currently Subject to a Recommendation to Suspend Trade." CITES. December 19, 2019. https://cites.org/eng/resources/ref/suspend.php.

[218] United Nations Office on Drugs and Crime. "Is Nigeria Evolving into a Transit Hub for Wildlife Trafficking?" March 3, 2019. https://www.unodc.org/nigeria/en/is-nigeria-evolving-into-a-transit-hub-for-wildlife-trafficking.html.

[219] Unah, Linus. "As Pangolin Trade Heats Up, Nigeria Urged to Do More to Crack Down." April 2, 2020. https://news.mongabay.com/2020/04/as-pangolin-trade-heats-up-nigeria-urged-to-do-more-to-crack-down/.

### *Nigeria and China*

Nigeria and China's diplomatic relationship began on 1 February 1971 when Nigeria formally recognized the People's Republic of China (Appendix I).[220]

In the following years, China strengthened its economic ties with Nigeria, which is the most populous country in Africa with a large market for China-made products and has significant oil resources. China's aim of engaging with Africa in part due to mineral access is illustrated in Nigeria, with China investing $4.8 billion (out of $7.5 billion total to Sub-Saharan Africa) in Nigerian oil from 2001-2007.[221] From 2008-2010, Nigeria – along with Angola and Sudan – were among China's top trading partners.[222]

As of 2017, Nigeria and China had continued their economic relationship, with China accounting for 21% of imports to Nigeria (ahead of Belgium 9%, United States 8%, South Korea 7%, and United Kingdom 4%) and Nigeria exporting 6% of its goods to China (behind India 31%, United States 12%, and Spain 7%).[223] According to Zhao Yong, the Charge d'Affaires of the Embassy of the People's Republic of China in Nigeria, trade volume between Nigeria and China was USD$15.3 billion in 2018, a 10% increase from 2017 levels.[224] In addition to trade in goods, Chinese human capital in Nigeria has also grown in recent years. From 2012-2014, 8,057 Chinese workers were employed in Nigeria, which rose to 9,257 workers from 2015-2017 (Figure 8). Financial ties between Nigeria and China have also increased. From 2015-2017, China granted USD$422 million in loans annually to Nigeria (Table 1), which was well below the average for the whole of Africa. However, in 2018, the People's Bank of China signed a USD$2.5 billion three-year currency swap deal with the Central Bank of Nigeria, further strengthening Nigeria and China's financial ties.[225]

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[220] Shinn, David H., and Joshua Eisenman. *China and Africa: A Century of Engagement*. Philadelphia, PA: University of Pennsylvania Press, 2012.

[221] Ibid.

[222] Ibid.

[223] CIA. "Africa: Nigeria." *The CIA World Factbook*. June 17, 2020. https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html.

[224] No Author. "How China's Belt and Road Initiative Affects Nigeria, Africa." *Vanguard*, January 28, 2020. https://www.vanguardngr.com/2020/01/how-chinas-belt-and-road-initiative-affects-nigeria-africa/.

[225] Belt and Road News Current Affairs Correspondent Africa. "Is Chinese Investment a Threat to Nigeria?" *Belt and Road News*, August 12, 2019. https://www.beltandroad.news/2019/08/12/is-chinese-investment-a-threat-to-nigeria/.

Public opinion of China in Nigeria is favorable to China. In 2019, the Pew Research Center conducted a survey of Nigerian citizens which found that 83% of respondents believe China's growing economy is a net positive for Nigeria and 82% of respondents said Chinese investment is good for their country due to its potential for job creation.[226] This overall favorable impression of China reinforces China's goals of increased engagement with Nigeria and has provided fertile ground for BRI to flourish in West Africa.

***BRI and Nigeria's Pangolin Trafficking Problem***

The date Nigeria joined the Belt and Road Initiative is disputed depending on the source, and is anywhere from late 2018 to February 2019. Adding to the lack of clarity is that there is no official and publicly available list of BRI projects from the CPC or Nigerian government. Of the several infrastructure projects referred to as under the "BRI in Nigeria" umbrella include multiple standard gauge rail lines (Abuja-Kaduna, Lagos-Ibadan) and a mass transit system (in Abuja, the capital of Nigeria), as well as two international airports (Malam Aminu Kano International Airport in Kano and a new terminal at Nnamdi Azikiwe International Airport in Abuja), satellites (Nigcomsat satellites), and Lekki deep sea port project.[227]

The two major standard gauge rail lines (Abuja-Kaduna, Lagos-Ibadan) both began prior to the start of the 'official' BRI relationship. The Abuja-Kaduna rail service opened in 2016 and provides transportation between the capital and industrial city of Kaduna.[228] The Lagos-Ibadan railway was funded in 2012 by the China Export-Import Bank via USD$1.53 billion in concessional loans and was under construction from 2015-2019.[229] The project was constructed by the China Civil Engineering Construction Company to transport freight and passengers.[230]

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[226] Quinn, Dennis. "Nigerians Living Near a Major Belt and Road Project Grew More Positive Toward China After it Was Completed." *Pew Research Center*, April 23, 2020. https://www.pewresearch.org/fact-tank/2020/04/23/nigerians-living-near-a-major-belt-and-road-project-grew-more-positive-toward-china-after-it-was-completed/.

[227] No Author. "How China's Belt and Road Initiative Affects Nigeria, Africa." *Vanguard*, January 28, 2020. https://www.vanguardngr.com/2020/01/how-chinas-belt-and-road-initiative-affects-nigeria-africa/.; No Author. "BRI Projects." *Belt and Road Initiative,* n.d. https://www.beltroad-initiative.com/projects/.

[228] No Author. "How China's Belt and Road Initiative Affects Nigeria, Africa." *Vanguard*, January 28, 2020. https://www.vanguardngr.com/2020/01/how-chinas-belt-and-road-initiative-affects-nigeria-africa/.

[229] Lopez, Alessandra L., Ji, Chen, Yang, Emma, Choe, Incheol, Delaney, Nora and Rocky Intan. "China's BRI in Nigeria: Spillover Effects of Lagos-Ibadan Railway to the Regional Economy – Part 1." Columbia University, May 10, 2019. https://www.tearline.mil/public_page/chinas-bri-in-nigeria-spillover-effects-of-lagos-ibadan-railway-to-the-regional-economy-part-1/.

[230] Ibid.

For the purpose of this study, it is not possible to say with certainty that BRI has an influence on pangolin trafficking in Nigeria. The inconsistency of BRI start dates, as well as a paucity of intra-Nigeria data on pangolin trafficking makes it highly difficult to determine whether or not BRI can be credited with the uptick in Nigeria's role in the pangolin trafficking supply chain over the last decade. That is part of the challenge in analyzing an illicit trade – we only know about the least successful cases and seizure data provides trend analysis but a still limited view of the entire system. However, Nigeria may illustrate BRI's role as one of many drivers which facilitate pangolin trafficking across Nigeria's borders which may be analyzed in the future.

**Question 2: How Might BRI Influence African Pangolin Trafficking in the Future?**

BRI is one of many drivers of pangolin exploitation, which need to be addressed by both members of the conservation community and the nation states committed to stopping the illegal trade. These include customs enforcement, governmental corruption, and the security outlook. Within the existing wildlife conservation environment, BRI is an additional driver that places pressure on efforts to protect African pangolins in several ways.

Economic and infrastructure connectivity enables illegal trade. For a range of plant and animal species, environmental exploitation such as logging, agribusiness, mining, and drilling bring humans into closer contact with previously unaffected wildlife and make wildlife and plant products much easier to move. With construction and development, existing barriers to trade will be further reduced, which will open up new corridors for illicit activity and present new challenges for law enforcement. Lastly, the physical construction of projects will not only lead to habitat degradation and loss, which will have a direct impact on pangolins and other valuable wildlife species, but will facilitate the poaching and smuggling of pangolins through the creation of new physical trafficking networks.

An increasing human resource presence in China may lead to small-scale trafficking activity. On several occasions, Chinese nationals have been caught smuggling endangered species from Africa back to China.[231] Although this is unlikely to be a significant problem compared to the large quantity scale shipments becoming more prevalent and that are the focus of this study,

[231] Omondi Gumba, Duncan E., and Richard Chelin. "China Is Proving Key to Reducing Africa's Wildlife Trafficking." Institute for Security Studies, August 19, 2019. https://issafrica.org/iss-today/china-is-proving-key-to-reducing-africas-wildlife-trafficking.

the movement of Chinese workers to African nations with BRI projects may present an avenue for small-scale trafficking activity. In 2014, a business delegation accompanying President Xi to Tanzania was implicated in the illegal purchase of thousands of kilograms of elephant ivory with the purchase of offloading it when they returned to China.[232] Later in 2017, two Chinese diplomats were accused of collaborating with officials in Republic of Congo, Central African Republic, and South Sudan to acquire illegal ivory and return to sell it in China.[233] For their part, officials in the Chinese government have been vocal about the harm this may do to China's image in Africa. After the 2014 allegation, China's foreign ministry decried the "bad habits" and unlawful behavior of its citizens,[234] and China has collaborated with World Wildlife Fund to educate their citizenry on the perils of engaging in wildlife trafficking while abroad in Africa.[235] The cynical view, however, is that in these efforts China has focused more on ensuring their citizens don't break laws internationally and cast a poor reflection on their country, rather than discouraging wildlife crime in Africa because of its conservation merit. This view is further reinforced by the CPC's allowance of illegal pangolin restaurant consumption and the loopholes for using pangolins in TCM, discussed in Chapter Two.

With China's increasing engagement on the African continent, there is a higher potential for pangolin trafficking from African range states to Asian demand countries, notably Vietnam and China. Reviewing BRI countries and their roles in the global pangolin trafficking supply chain over the next five years will be essential to ensuring the survival of African pangolins.

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[232] Denyer, Simon. "Chinese Officials Accused of Smuggling Ivory During State Visit to Tanzania." *The Washington Post*, November 6, 2014. https://www.washingtonpost.com/world/asia_pacific/chinese-officials-accused-of-smuggling-ivory-during-state-visit-to-tanzania/2014/11/06/ecea6ef7-f68d-4344-9865-0095b1531c5f_story.html.

[233] Wrate, Jonny. "Uganda: Chinese Diplomats Face Ivory Trafficking Investigation." *Organized Crime and Corruption Reporting Project*, June 6, 2017. https://www.occrp.org/en/daily/6545-uganda-chinese-diplomats-face-ivory-trafficking-investigation.

[234] Kaiman, Jonathan. "China-Africa Relations Hurt by Bad Chinese Behaviour, Says Ambassador." *The Guardian*, July 17, 2014. https://www.theguardian.com/world/2014/jul/17/chinese-ambassador-tanzania-china-africa-relationship-ivory-smuggling-counterfeit.

[235] World Wildlife Fund. "China Joins African Countries in Efforts to Curb Wildlife Trafficking," March 27, 2019. https://wwf.panda.org/wwf_news/?345134/ChinajoinsAfricancountriesineffortstocurbwildlifetrafficking.

## PART THREE: CONCLUSION

### Discussion

It is likely that BRI may enable trafficking of African pangolins, through increased connectivity and a growing role of China on the African continent. According to Dan Challender, one of the foremost experts on pangolin conservation, "The decline of Asian pangolin populations, and crucially, the increasing economic and development ties between East Asia and many African countries in recent years has resulted in a growing illegal trade in African pangolin parts to Asian markets."[236]

According to the analysis provided by the Green Belt and Road Initiative Center,[237] analysis derived from Chinese government sources, 43 of the 54 countries in Africa have signed BRI agreements (Appendix 1). Although this number is not independently corroborated from African governments, it is undeniable that China is acting to expand its influence and connectivity on the African continent. In Sub-Saharan Africa, only Central African Republic, Democratic Republic of the Congo, eSwatini (which is the sole African nation without diplomatic relations with the PRC), Guinea-Bissau, Malawi, Niger, and São Tomé and Príncipe are not considered BRI partner countries. In the 2017 TRAFFIC analysis, all 11 African pangolin origin countries are involved in BRI. Of the 11 origin countries highlighted in the 2020 WJC report, all but Democratic Republic of Congo and Central African Republic are BRI partner countries. Nigeria was the prominent African country in terms of both transit and destination roles within the pangolin trafficking supply chain, and has been a BRI country since 2018/2019. The continued development of trade routes between Africa and Asia, as well as infrastructure construction bringing humans and wildlife into closer contact, suggest that BRI can act to exacerbate the pangolin trafficking supply chain.

The specific role of BRI in African countries, particularly pangolin range states and those otherwise implicated in the illegal trade of pangolins, is one that should be followed in the coming years. There is little reason to believe that as China expands their influence in Africa and continues

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[236] Challender, Daniel W.S., Baillie, Jonathan E. M., Waterman, Carly, Pietersen, Darren W., Nash, Helen, Leanne Wicker, Keri Parker, et al. "On Scaling Up Pangolin Conservation." *TRAFFIC Bulletin* 28, no. 1 (2016). https://www.pangolinsg.org/wp-content/uploads/sites/4/2018/06/Challender-et-al_2016_On-Scaling-Up-Pangolin-Conservation.pdf.

[237] The Green Belt and Road Initiative Center. "Countries of the Belt and Road Initiative (BRI)." n.d. https://green-bri.org/countries-of-the-belt-and-road-initiative-bri.

to develop economic corridors into Africa through BRI that this will not lead to increased pangolin exploitation.

**The Role of COVID-19 on Pangolin Supply**

Unlike the impact of COVID-19 on pangolin demand, the conservation community has an idea of the role COVID-19 has played on wildlife trafficking supply chains. COVID-19 has temporarily shifted the activities of transnational crime organizations engaging in wildlife trafficking, as countries along the wildlife trafficking supply chain from Sub-Saharan Africa into Southeast Asia and China have instituted national lockdowns, quarantines, and international border restrictions. This has resulted in increased poaching activity but decreased capacity for traffickers to move their product across international borders. This pattern is typical for a wide variety of trafficked wildlife species, including rhinoceros, elephant, and pangolin.

In response to COVID-19, countries along the wildlife trafficking supply chain from Sub-Saharan Africa into Southeast Asia and China have tightened border constraints. Poaching activity in former tourist hotspots and previously safe regions for wildlife spiked in the immediate aftermath of Sub-Saharan African nations closing their borders. This was particularly stark in southern Africa, where nine rhinos were killed in South Africa's North West Province and six rhinos in Botswana in the two weeks following both countries' closures.[238] National lockdowns included the cessation of tourist activity in parks, which had a compounded effect of reducing the human presence in these areas and cutting off park income used to pay ranger staff who protect wildlife within park borders.

The role of border closures on pangolin trafficking in particular is more difficult to measure, as rhinos tend to be well-guarded on national parks and conservancies and their loss is more noticeable than pangolins. Pangolins are secretive by nature and conservationists are uncertain of their exact populations, with no studies measuring pangolin poaching post-COVID-19 published to date. Per a WJC rapid assessment of COVID-19 and wildlife trafficking, the 1 February 2020 closure of the China-Vietnam border has led traffickers to create large stockpiles

[238] Roth, Annie. "Poachers kill more rhinos as coronavirus halts tourism to Africa." *The New York Times,* April 8, 2020. https://www.nytimes.com/2020/04/08/science/coronavirus-poaching-rhinos.html.

in Vietnam of ivory and pangolin products initially destined for China.[239] Raw ivory is being stockpiled in Vietnam, Lao PDR, and Cambodia as well.[240] Multiple Southeast Asian nations' COVID-19 responses have hampered traditional avenues for trafficking wildlife products via air, ship, and road (Figure 10), including land routes used by pangolin smugglers attempting to move pangolin products through Vietnam into China. From January to April 2020, "several Vietnamese traders expressed difficulties with smuggling wildlife into China due to extended border checks and travel restrictions and spoke [to WJC] of their desperation to offload large quantities of stock, often at discounted prices."[241] Anecdotally, Wildlife Justice Commission operatives were offered over 22 tons of pangolin scales for sale in Vietnam from January to March 2020 when COVID-19 was ramping up.[242]

[239] Wildlife Justice Commission. "Rapid Assessment of the Impact of COVID-19 on Wildlife Trafficking." Wildlife Justice Commission, April 2020. https://wildlifejustice.org/new-analysis-measures-to-combat-covid-19-impact-wildlife-trafficking/.

[240] Ibid.

[241] Ibid.

[242] Ibid.

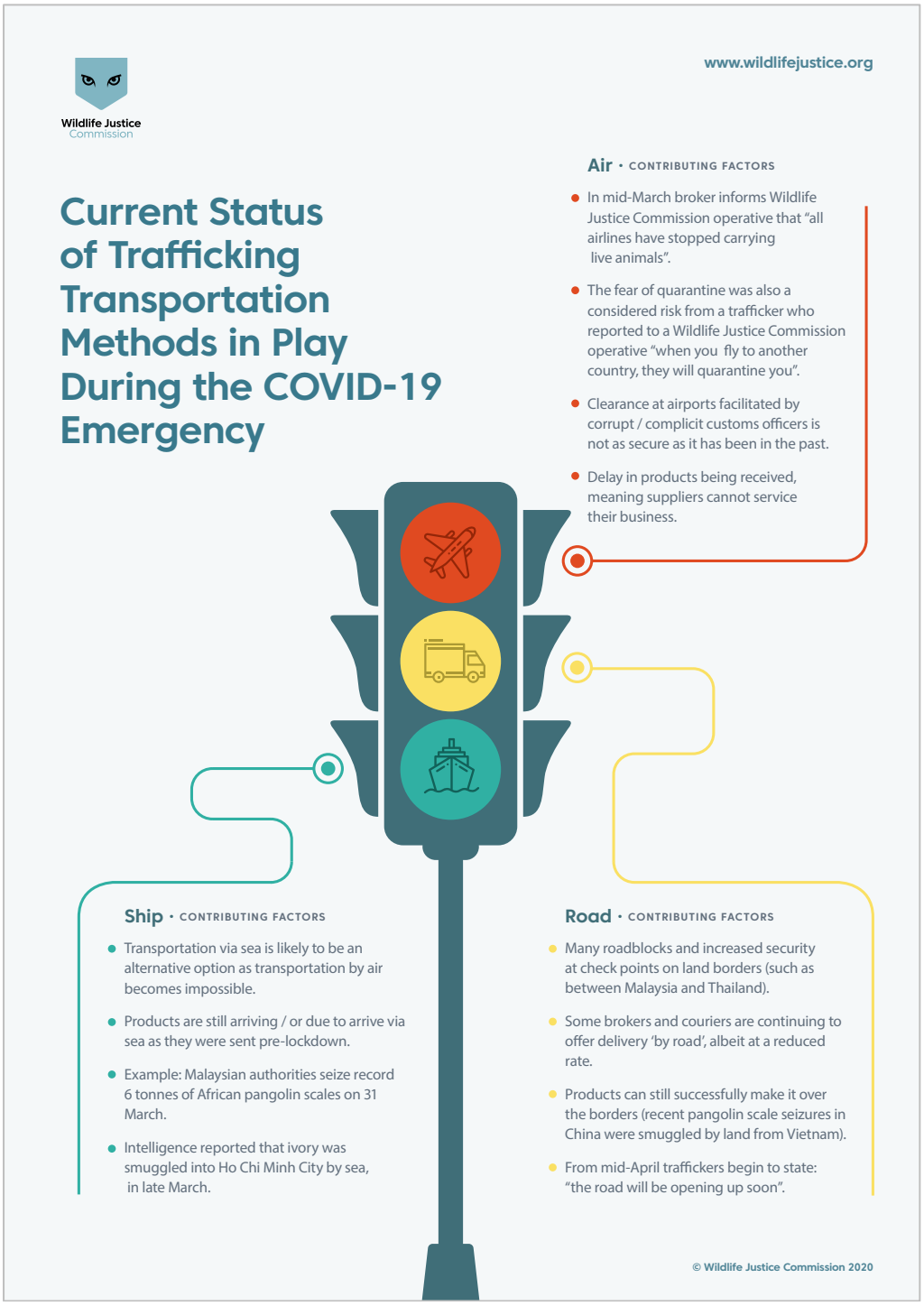


**Figure 10. COVID-19 barriers to wildlife trafficking.**
Image courtesy of the Wildlife Justice Commission.[243]

[243] Wildlife Justice Commission. "Rapid Assessment of the Impact of COVID-19 on Wildlife Trafficking." Wildlife Justice Commission, April 2020. https://wildlifejustice.org/new-analysis-measures-to-combat-covid-19-impact-wildlife-trafficking/.

Unfortunately for pangolins, it is likely that wildlife traffickers will utilize their growing stockpiles of poached wildlife and resume international trafficking at a higher level than before the onset of COVID-19 once border restrictions are lifted along key nodes in the Africa to Asia supply chain. Multiple wildlife seizures in March and April 2020, including the seizure of 441 kg of pangolin scales in China in from Vietnam on 1 April 2020, indicate that the pangolin trafficking supply chain is still attempting to run as normal and will resume when the threat of COVID-19 has passed.

**Data Gaps and Areas for Future Research**

Thematically, there is a link between BRI on the African continent and pangolin trafficking. Lack of data is severely hampering the conservation community's ability to answer this question. Conducting this study, on a larger and more holistic scale, would be a worthwhile endeavor in understanding the exact mechanisms of pangolin trafficking in African BRI partner states, and may also shed light on the combined trafficking of pangolin and elephant products from Africa to Asia. There are several remaining data gaps to be filled:

*Seizures per country per year*. Although the TRAFFIC and WJC reports are highly informative, for the purposes of identifying country-level trends per year – as would be most effective in assessing the impact of BRI on pangolin trafficking – these reports only provide data in consolidated forms of multiple year increments. An assessment at the country level with the base data used by the authors of the TRAFFIC and WJC reports would allow for a statistically powerful quantitative assessment. Utilizing the base data would also allow researchers to streamline the "large quantity seizure" metric. TRAFFIC considered seizures over 1,000 kg to be large-scale, while WJC reduced this threshold to 500 kg. Using the same metric, by year, would allow researchers to identify country-level trends in pangolin seizure data and, if using the 500 kg metric, would increase the sample size and yield a more accurate picture of the global pangolin trafficking supply chain.

*Seizure data for small quantity events.* Through using the TRAFFIC and WJC studies, information on small quantity events (less than 1,000 kg for TRAFFIC and less than 500 kg for WJC) is unavailable. TRAFFIC's Wildlife Trade Portal online dataset, available at www.wildlifetradeportal.org, provides some insight into small scale trafficking seizures but a holistic assessment of small quantity events currently does not exist. This limitation is partly due

to the inconsistency with which countries report seizure event data, but is also a result of the need for the conservation and law enforcement communities to prioritize their attention and limited resources on large scale trafficking. For the purposes of understanding BRI and trafficking, interpreting the volume of small scale trafficking events by Chinese nationals traveling between mainland China and BRI participant countries is essential.

*Pangolin poaching hotspots, within a country and at the national level*. The primary data source for pangolin poaching events is identifying the country listed as an origin country on a seized wildlife product manifest. Forgery, money laundering, and other white-collar crimes coincide with wildlife trafficking, making manifests not wholly reliable. Promising studies with African elephant ivory, including placing a GPS tracker into a tusk and following it through the supply chain[244] and DNA sampling seized tusks to identify origin points,[245] create potential avenues to replicate with pangolins. One attempt to collate data from park rangers for more efficient patrols is the SMART (Spatial Monitoring and Reporting Tool) system, with data analysis by a consortium of wildlife conservation agencies including Wildlife Conservation Society and World Wildlife Fund.[246]

Despite promising projects like SMART, data remain the major limitation in terms of understanding the pangolin trafficking supply chain and leaves us with only general trends and impacts to assess as a result. Future research to address any of the above data limitations would help the conservation community learn more about the constantly evolving nature of pangolin trafficking. Another action that the conservation community can take to address data limitations is to consolidate data across organizations and make it publicly available. Data in the conservation community tends to be very well-guarded. In their reports, both TRAFFIC and WJC built their own data sets, which incorporated many disparate sources. Although the TRAFFIC Wildlife Trade Portal is publicly available for those granted access, it remains incomplete compared to the independent assessments by TRAFFIC and WJC in their own reports. Similarly, the United Nations Office of Drugs and Crime manages their World WISE database, tracking wildlife seizure

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[244] Christy, Bryan. "How Killing Elephants Finances Terror in Africa." *National Geographic*, August 12, 2015. https://www.nationalgeographic.com/tracking-ivory/article.html.

[245] Wasser, S.K., L. Brown, C. Mailand, S. Mondol, W. Clark, C. Laurie, and B.S. Weir. "Genetic Assignment of Large Seizures of Elephant Ivory Reveals Africa's Major Poaching Hotspots." *Science* 349, no. 6243 (July 3, 2015): 84–87. https://doi.org/10.1126/science.aaa2457.

[246] Reynolds, Matt. "The War Against Animal Poaching Will Be Won by Data, Not Drones." *WIRED*, February 14, 2018. https://www.wired.co.uk/article/elephant-rhino-wildlife-poaching-smart-wildlife-conservation-society.

events globally. Cooperation between NGOs and IGOs working in this space would allow conservation agencies, independent researchers, and law enforcement to develop the most complete picture of pangolin trafficking. Duplication of effort wastes time that pangolins do not have.

# Chapter Four: Conclusions and Policy Recommendations

## KEY FINDINGS

China's Belt and Road Initiative has the potential to negatively affect both demand and supply of African pangolins. Awareness of how BRI influence demand and supply of African pangolins is important for groups and nations interested in conserving pangolins.

Scales are in demand for use in TCM, while meat is in demand for restaurant consumption. TCM is likely to become more prominent as a result of BRI, through President Xi's promotion of the practice abroad, China's pharmaceutical export industry, and its connection to the Chinese identity and BRI. This will place additional pressure on African pangolins, which will only be alleviated through demand reduction strategies and enforcement of recent rule changes removing pangolins from the *Chinese Pharmacopoeia*. BRI may also lead to increased pangolin trafficking in the future, due to the increased connectivity and infrastructure, developing economic connections, and Chinese presence in African BRI partner countries. In terms of supply, BRI is difficult to separate out from other drivers of pangolin trafficking, but it is highly likely that BRI in the future may have a detrimental impact on African pangolin conservation if BRI's influences on pangolin demand and supply are left unaddressed.

## POLICY RECOMMENDATIONS

Due to the highly complex nature of pangolin conservation, both as a subject and geographically, there are many stakeholders with varying levels of involvement trying to address this issue. At the national level, this includes pangolin range states, African BRI partner countries, and China. At the international level, intergovernmental organizations including INTERPOL, CITES, the International Union for the Conservation of Nature, the United Nations General Assembly, and the African Union all have a stake in pangolin conservation and regional issues. Many nongovernmental organizations are also involved, most notably TRAFFIC, World Wildlife Fund, and the Wildlife Justice Commission. Members of the larger conservation community and academia also have an interest in conserving African pangolins.

**United States Policy Recommendations**

For the purpose of this study, I focus on the United States as an important actor for several reasons. First, the United States has a vested interest in protecting wildlife. Through membership in CITES, federal emphasis on wildlife conservation via the 2014 National Strategy for Combating Wildlife Trafficking[247] and the END Wildlife Trafficking Act,[248] the United States has stated a commitment to wildlife conservation. Secondly, China as a rising great power is of paramount importance to United States foreign policy, and the U.S. sees BRI as a tool to expand China's soft power globally, promoting China's authoritarian model while pushing the U.S. out. With China as a great power competitor, pangolin conservation – an area otherwise likely considered of little importance amidst the COVID-19 pandemic its subsequent global economic crisis – may provide a window for United States engagement that can address our relationship with both wildlife and China at the same time. The policy recommendations for the United States are as follows:

***Executive Branch***

1. *Promote demand reduction*. Per the 2017 TRAFFIC report, the U.S. is a demand market for pangolins. Although the U.S. domestic market is smaller and less influential than those in China and Vietnam, addressing the United States' role as a demand country in its own right is important to larger pangolin conservation efforts. Demand reduction efforts, through U.S. Fish and Wildlife Service public awareness campaigns, as well as grant funding to NGOs working on this issue at home and in high-demand areas, are essential to protecting pangolins and slowing the illegal wildlife trade. Demand reduction strategies, in order to be effective, must both select an effective spokesperson and message and blanket "stop pangolin consumption" campaigns may be ineffective if these factors are not taken into consideration.
2. *Include all eight species of pangolin under the Endangered Species Act listing.* The current iteration of the Endangered Species Act includes only one species: the Temminck's ground pangolin (*S. temminckii*) and prohibits the 'take' (ie. harm, capture, kill) of this species in

[247] Obama, Barack. National Strategy for Combating Wildlife Trafficking (2014). https://obamawhitehouse.archives.gov/sites/default/files/docs/nationalstrategywildlifetrafficking.pdf.

[248] Rep. Royce, Edward R. [R-CA-39] (sponsor). Eliminate, Neutralize, and Disrupt Wildlife Trafficking Act of 2016, Pub. L. No. Public Law No: 114-231, H.R.2494 (2016). https://www.congress.gov/bill/114th-congress/house-bill/2494.

the United States. A major challenge of enforcement, and reason why CITES member Parties – including the United States – uplisted all eight species to Appendix I is that individual species are very difficult to differentiate from each other. One pangolin species protected while the others are not increases the likelihood of enforcement mistakes and helps launder pangolins illegally into and within the United States. All eight species' populations are declining and would benefit from protection under the Endangered Species Act. Although the U.S. is a much smaller demand market for pangolins, listing under the ESA is a relatively straight forward action that can have a positive impact for pangolins in the United States.

3. *Emphasize Nigeria, China, and Singapore to be countries of concern in Department of State's annual END Wildlife Trafficking report.* This designation directs the Department of State, through the END Wildlife Trafficking Act, to assist these countries in designing and implementing an anti-wildlife-trafficking infrastructure in order to combat wildlife trafficking within and across their borders.
4. *Address myriad data gaps.* Agencies in the Executive Branch, namely U.S. Fish and Wildlife Service and members of the Intelligence Community, are perfectly placed to fill the large number of data gaps, ranging from pangolin demand to China's BRI projects and trafficking activity. Additional support to these agencies for projects focusing on pangolin trafficking in particular would benefit pangolins, but also positively influence many other species of wildlife and the security and economic consequences of the larger international wildlife trafficking problem.
5. *Continue interagency collaboration*. Cooperation between U.S. Fish and Wildlife, the Department of Justice, the Department of State, the Department of Treasury, and the Intelligence Community is essential to combatting pangolin trafficking, and wildlife trafficking on the whole. A strong interagency process, led within the Department of the Interior, would minimize duplication of effort and streamline government actions in countering wildlife trafficking.

***Legislative Branch***

1. *Amend the Eliminate, Neutralize, and Disrupt Wildlife Trafficking Act of 2016 (H.R.2494) to require the Department of State to submit its annual report and strategic for an*

*additional five years*. The annual report by the Department of State requires the agency to identify focus countries and countries of concern and integrate wildlife trafficking intervention into programmatic work at overseas U.S. missions in these countries. The reporting requirement will end in 2021.

**China Policy Recommendations**

China has several avenues with which it can act to protect pangolins, if it is truly serious about doing so.

Firstly, closing the Wildlife Protection Law loophole that allows pangolins to be sourced from government stockpiles and completely removing the remaining pangolins from the *Chinese Pharmacopoeia* – both as raw materials and ingredients in patented medicines – would help to reduce both demand and supply pressures on pangolins.

Secondly, while promoting the use of TCM abroad, representatives of the Chinese government should emphasize that it is the position of the government that pangolins should be protected and discourage the use of pangolin-based TCM products. This is particularly important in terms of pharmaceutical exports and practitioners at TCM centers. As an added measure, the Chinese government could issue public warnings and instructions for travelers at key travel nodes, particularly airports, specifically regarding the illegality of pangolin consumption.

Thirdly, China should re-evaluate its attitude toward restaurant consumption. Although pangolins are utilized primarily for their scales in TCM, restaurant demand for their meat is a notable driver of pangolin exploitation. Tightening enforcement and penalties for restaurants that provide illegal pangolins for their customers may help to close this enforcement gap.

Lastly, demand reduction is an important part of the conservation puzzle, particularly when done in concert with enforcement strategies. Government action to promote demand reduction may be more effective than independent campaigns by NGOs, and is worth investigating, particularly in terms of making the intellectual connection between wildlife markets and subsequent public health crises like COVID-19. Determining the appropriate message and communicator for this message is crucial.

## CONCLUSION

Pangolins are in danger of going extinct before many in the world learn of their existence. Demand for Traditional Chinese Medicine and the massive pangolin trafficking supply chain are placing immense pressure on pangolin populations across Asia and Africa. African pangolins have experienced staggering levels of poaching in the last decade and China's Belt and Road Initiative places another strain on a family of species that were already barely holding on.

For the United States, pangolin conservation represents an opportunity to engage China at an intersection of several different policy areas: conservation, environment, security, foreign policy, and economics. As a result, addressing pangolin conservation through the lens of BRI's impact on pangolins allows government actors, such as the United States, to simultaneously address a growing wildlife conservation issue while meeting other policy goals.

In a more liberal form of international engagement, the United States could utilize the issue of pangolin conservation to find common ground with China on an issue that President Xi has signaled interest in confronting. Through his promotion of wildlife conservation and anti-opulence campaign, President Xi has a history of pushing for domestic legislation in favor of wildlife conservation issues and in the past China has bowed to international pressure in this space – most recently with the domestic ban on elephant ivory. The key problem, both for China and external international actors such as the U.S. engaging in wildlife conservation issues, is domestic enforcement in China. As of August 2020, China is in agreement with CITES ban on international trade of pangolins via the Wildlife Protection Law, yet the TCM loophole in the Wildlife Protection Law combined with the incomplete removal of pangolins from the *Chinese Pharmacopoeia*, show that China is not as fully committed to protecting pangolins as they appear at first glance. In an era where the United States had international credibility in environmental and conservation policy, the U.S. could work alongside Western allies and those in Southeast Asia to encourage China to recognize that promoting pangolin conservation and sustainable use of wildlife is in the country's best interest and would give the PRC a prominent seat at the table on global wildlife conservation issues.

However, this view of the U.S. as an environmental leader and liberal idea of the United States and China relationship is growing increasingly distant from the current reality. The Trump Administration's "trade war" with China set a more combative than collaborative tone for working with China on an issue like wildlife conservation. The United States and its Western allies became

more vocally critical of China as a result of its persecution of the Uighur Muslim minority population, attempts to stifle the "one country two systems" sovereignty of Hong Kong, and most recent initial coverup of the spread of the COVID-19 epidemic within their borders. Although the United States' opposition to China was initially unilateral, these recent actions by China may provide an impetus for U.S. allies to reexamine their posture toward the PRC and open the door for collaboration with the U.S. against China on a range of issues, not least wildlife conservation. In this environment, Western engagement with the PRC may be less focused on working collaboratively with China and nations along the pangolin trafficking supply chain to fix the problem and more into pressuring President Xi and the CPC to address its role in facilitating the ongoing pangolin conservation crisis. COVID-19 provided a window of opportunity for the United States to pressure China to close its wet markets. In an April 2020 statement, Secretary of State Mike Pompeo urged the PRC to close its wet markets. In May, Senator Chris Coons (D-DE) and Senator Lindsey Graham (R-SC), along with World Wildlife Fund President and CEO Carter Roberts issued a joint call to close wet markets that "sell high-risk wildlife for human consumption."[249] While wildlife conservation does not appear to be a high priority issue under the current U.S. administration, and is being actively discouraged through efforts to relax big game hunting bans and dismantle the Endangered Species Act, President Trump may seize the opportunity to ban wildlife product imports, including TCM products, from China as a way of folding wildlife conservation into the "trade war" and pushing against China regarding a practice central to the Chinese identity.

China's role as the source of the COVID-19 pandemic has added another layer of complication to the relationship between China and the rest of the world, and it is uncertain what priority, if any, addressing pangolin conservation will have in the global pandemic response. As the international community focuses on the pandemic, pangolins continue to be exploited to meet demand in traditional medicine and are trafficked from range states in Africa into Asia at alarming rates. The linkage between pangolins – and trafficked wildlife – and the COVID-19 pandemic is still being explored, but if the illegal wildlife trade of pangolins to meet demand in Asia is left unchecked, it is likely that pangolin populations will continue to plummet and illegal wildlife will be the source of the next global pandemic.

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[249] Coons, Chris, Lindsey Graham, and Carter Roberts. "How to Stop the Next Pandemic." *Politico*, May 15, 2020. https://www.politico.com/news/agenda/2020/05/15/how-to-stop-the-next-pandemic-260946.

# Appendix: Diplomatic and Economic Relations between China and African Nations

| African Nation | Date Initial Diplomatic Relations Established[250] | BRI Member State[251]** | Year MOU Signed (as of March 2020)[252] |
|---|---|---|---|
| Algeria | 20 December 1958 | Yes | 2018 |
| Angola | 12 January 1983 | Yes | 2018 |
| Benin | 12 November 1964 | Yes | Unconfirmed |
| Botswana | 6 January 1975 | No | None |
| Burkina Faso | 15 September 1973 | No | None |
| Burundi | 21 December 1963 | Yes | 2018 |
| Cameroon | 26 March 1971 | Yes | 2015 |
| Cape Verde | 25 April 1976 | Yes | 2018 |
| Central African Republic | 29 September 1964 | No | None |
| Chad | 28 November 1972 | Yes | 2018 |
| Comoros | 13 November 1975 | Yes | Unconfirmed |
| Republic of Congo | 22 February 1964 | Yes | Unconfirmed |
| Côte d'Ivoire | 2 March 1983 | Yes | 2017 |
| Djibouti | 8 January 1979 | Yes | 2018 |
| Democratic Republic of the Congo | 20 February 1961 | No | None |
| Egypt | 30 May 1956 | Yes | 2016 |
| Equatorial Guinea | 15 October 1970 | Yes | 2019 |
| Eritrea | 24 May 1993 | Yes | 2018 |
| eSwatini | None* | No | None |
| Ethiopia | 24 November 1970 | Yes | 2018 |
| Gabon | 20 April 1974 | Yes | 2018 |
| Gambia | 14 December 1974 | Yes | 2019 |
| Ghana | 5 July 1960 | Yes | 2018 |
| Guinea | 14 October 1959 | Yes | 2018 |
| Guinea Bissau | 15 March 1974 | No | None |
| Kenya | 14 December 1963 | Yes | 2017 |
| Lesotho | 30 April 1983 | Yes | 2019 |
| Liberia | 17 February 1977 | Yes | 2019 |
| Libya | 9 August 1978 | Yes | 2018 |

[250] Shinn, David H., and Joshua Eisenman. *China and Africa: A Century of Engagement*. Philadelphia, PA: University of Pennsylvania Press, 2012.

[251] Xinhua Silk Road Information Service. "Belt and Road FAQ: What are the Belt and Road Countries?" June 23, 2020. https://en.imsilkroad.com/p/314398.html.

[252] The Green Belt and Road Initiative Center. "Countries of the Belt and Road Initiative (BRI)." n.d. https://green-bri.org/countries-of-the-belt-and-road-initiative-bri.

| African Nation | Date Initial Diplomatic Relations Established[253] | BRI Member State[254]** | Year MOU Signed (as of March 2020)[255] |
|---|---|---|---|
| Madagascar | 6 November 1972 | Yes | 2017 |
| Malawi | 28 December 2007 | No | None |
| Mali | 25 October 1960 | Yes | 2019 |
| Mauritania | 19 July 1965 | Yes | 2018 |
| Mauritius | 15 April 1972 | No | None |
| Morocco | 1 November 1958 | Yes | 2017 |
| Mozambique | 25 July 1975 | Yes | 2018 |
| Namibia | 22 March 1990 | Yes | 2018 |
| Niger | 20 July 1974 | No | None |
| Nigeria | 10 February 1971 | Yes | 2018 |
| Rwanda | 12 November 1971 | Yes | 2018 |
| São Tomé and Príncipe | 12 July 1975 | No | None |
| Senegal | 7 December 1971 | Yes | 2018 |
| Seychelles | 30 June 1976 | Yes | 2018 |
| Sierra Leone | 29 July 1971 | Yes | 2018 |
| Somalia | 14 December 1960 | Yes | 2015 |
| South Africa | 1 January 1998 | Yes | 2015 |
| South Sudan | 9 July 2011 | Yes | 2018 |
| Sudan | 4 February 1959 | Yes | 2018 |
| Tanzania | 9 December 1961 | Yes | 2018 |
| Togo | 19 September 1972 | Yes | 2018 |
| Tunisia | 10 January 1964 | Yes | 2018 |
| Uganda | 18 October 1962 | Yes | 2018 |
| Zambia | 29 October 1964 | Yes | 2018 |
| Zimbabwe | 18 April 1980 | Yes | 2018 |

* eSwatini is the only African country that has not established diplomatic relations with the People's Republic of China, due to their recognition of Taiwan.

** BRI Member State distinction and year of signed MOU are sourced from Chinese government sources and not wholly independently corroborated.

253 Shinn, David H., and Joshua Eisenman. *China and Africa: A Century of Engagement*. Philadelphia, PA: University of Pennsylvania Press, 2012.

254 Xinhua Silk Road Information Service. "Belt and Road FAQ: What are the Belt and Road Countries?" June 23, 2020. https://en.imsilkroad.com/p/314398.html.

255 The Green Belt and Road Initiative Center. "Countries of the Belt and Road Initiative (BRI)." n.d. https://green-bri.org/countries-of-the-belt-and-road-initiative-bri.

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## Chapter One: Introduction to the Issue


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**Chapter Four: Conclusions and Policy Recommendations**

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